

IDAHO DEPARTMENT OF FISH & GAME

JERRY M. CONLEY, DIRECTOR

INSTREAM FLOW STUDY Annual Report



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ABSTRACT

Instream flow studies were conducted on 28 stream reaches in 1980 and 1981. Instream flow requests for maintenance of game fish habitat were prepared for 22 stream reaches for submission to the Idaho Water Resource Board. Assessments were made using the Instream Flow Incremental Methodology developed by the U. S. Fish and Wildlife Service, Instream Flow Group, Fort Collins, Colorado. Hydraulic simulation was accomplished through use of the IFG-4 computer program, or a modified version of the Water Surface Profile (WSP) computer program. The habitat simulation model used was the IFG-3 (HABITAT) model. Data processing was done with the University of Idaho IBM computer.

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INTRODUCTION

In 1978, the Idaho Legislature passed a portion of the State Water Plan concerned with the development of instream flows for protection of fish and wildlife resources (Title 42, Chapter 15, Idaho Code). This code provides that the Idaho Water Resource Board may submit an application for water rights to the Department of Water Resources for establishment of a minimum stream flow. In 1979, the Bureau of Land Management (BLM) began an effort to quantify existing water uses and to determine the extent of water rights needed to protect the current and future uses of streams on public lands administered by the BLM. Subsequently, the BLM districts responded to an instream flow questionnaire with a list of over 100 potentially-critical streams on which instream flow needs are desired. In January 1980, this list was refined to 52 streams ranked in importance through systematic analysis.

In September 1980, the BLM contracted with the Idaho Department of Fish and Game to conduct instream flow studies on all priority streams, and develop instream flow recommendations and requests for submission to the Idaho Water Resource Board. The duration of the contract extends from 1980 through 1984. Since initiation of the contract, it has been amended twice to reflect a reprioritization of streams (Table 1).

OBJECTIVES

The objectives of the study are to determine required instream flows necessary for the maintenance of fisheries, wildlife, recreation, aesthetics, and other uses on streams identified on the BLM priority list, and to prepare instream flow requests for submission to the Idaho Water Resource Board.

TECHNIQUES USED

Thirty-two streams were selected for study during the 1980 and 1981 field seasons. The 1980 field season was abbreviated (the contract was initiated in September), so none of the nine streams investigated that year had a complete study conducted. Five streams (Table 2), previously investigated, have instream flow water-right requests already prepared (Cochnauer and Mabbott 1981). Instream flow recommendations and requests for submission to the Idaho Water Resource Board for 19 streams are included in this report. Other streams scheduled for investigation during 1980-1981 will be completed at a later date.

Fish and wildlife resources for each stream were identified by consultation with personnel from the BLM, U. S. Forest Service, and Idaho Department of Fish and Game. This information is interrelated with hydraulic properties of the study streams before flow recommendations are made.

Transects on which flow measurements were made were established on representative habitat types relating to critical fish species life-history phases. Locations of study transects for each stream are given in Table 3. Measurements at each transect included: water depths, water velocities, stream widths, study site length, and relative water surface elevations of transects. Water velocities and depths were measured to determine discharge and to define habitat. Velocities were measured with either a standard Price AA or pygmy current meter, and depths were measured with a wading rod. Stream widths and study site lengths were measured with a tape measure. Water surface and bench-mark elevations were determined with a surveyor's level and frisco (stadia) rod.

Three measurements over a range of flows are required to establish a stage-flow relationship for predictive capabilities through the Instream Flow Incremental Methodology using the IFG-4 hydraulic simulation model. At least one measurement is required when using the WSP model to simulate hydraulic characteristics for the Instream Flow Incremental Methodology. Additional information on methodologies and equipment can be found in: A Reference Workbook for Use in Determining Stream Resource Maintenance Flows in the State of Idaho (Cochner and Horton 1981).

A large variety of techniques is available to researchers for assessing instream flow requirements. When applicable, the Idaho Department of Fish and Game uses the Instream Flow Group Incremental Methodology. It is considered by many as the state-of-the-art in computer simulation of stream hydraulics and available habitats based on depth, velocity, and substrate. This methodology has a variety of acronyms that may make reference to it confusing. Some common terms are: IFG4-IFG3, IFG2-IFG3, IFG(WSP)-IFG3, IFG4-HABITAT, WSP-HABITAT, IFIM, and IFG incremental methodology. Part of the confusion is because three hydraulic simulation models can be used with the habitat model. For an indepth explanation of the methodology, Instream Flow Paper #11 (Milhous et al 1981) should be consulted.

Table 1. List of streams for instream flow studies, provided by the Bureau of Land Management.

<u>BOISE DISTRICT</u>		
Bruneau River, East Fork		Payette River
Jarbidge River		Salmon Falls Creek
Jordan Creek		Snake River
<u>BURLEY DISTRICT</u>		
Cold Creek		Salmon Falls Creek
Dry Creek		Shoshone Creek
Fort Cassia Creek		Stockton Creek
Howell Creek		Willow Creek
McMullen Creek		
<u>COEUR D'ALENE DISTRICT</u>		
American River		John Day Creek
Big Canyon Creek		Lake Creek
Boulder Creek		Latour Creek
Cottonwood Creek		Little Canyon Creek
Divide Creek		Little Salmon River
Elkhorn Creek		Lola Creek
Fall Creek		Partridge Creek
French Creek		Salmon River
Hard Creek		Slate Creek
Hazard Creek		Trail Creek
<u>IDAHO FALLS DISTRICT</u>		
Blackfoot River		Sawmill Creek
Beaver Creek		Summit Creek
Birch Creek		Wet Creek
Little Lost River		Willow Creek
Medicine Lodge Creek		
<u>SALMON DISTRICT</u>		
Big Springs Creek		Iron Creek
Big Timber Creek		Lemhi River
East Fork Salmon River		Pahsimeroi River
Hat Creek		Salmon River
Herd Creek		Squaw Creek
<u>SHOSHONE DISTRICT</u>		
Big Wood River		King Hill Creek
Camas Creek		Little Wood River
Friedman Creek		Muldoon Creek

Table 2. Streams with instream flow recommendations completed.

Stream	Status
Lemhi River	Water right application on priority list with the Idaho Department of Fish and Game.
Little Wood River	Water right granted by the 1981 Legislature.
Pahsimeroi River	Water right application submitted to Idaho Water Resources Board in 1981.
Payette River	Water right applications on priority list with the Idaho Department of Fish and Game.
Snake River	Water right applications on priority list with the Idaho Department of Fish and Game.

Table 3. Streams for which instream flows are being recommended in this report. Legal description of established transects is included.

Stream	Township	Range	Section
American River (2 transects)	T29N	R8E	27
	T29N	R8E	2
Beaver Creek	T11N	R36E	2
Big Canyon Creek	T36N	R1W	14
Big Springs Creek	T16N	R26E	19
Birch Creek (2 transects)	T10N	R29E	3
	T8N	R30E	3
East Fork Salmon River	T9N	R18E	3
Hat Creek	T17N	R20E	23
Herd Creek	T9N	R18E	1
Iron Creek	T19N	R21E	16
John Day Creek	T26N	R1E	13
Latour Creek	T47N	R1W	3
Little Canyon Creek	T36N	R1W	14
Little Lost River	T9N	R27E	4
Little Salmon River (2 transects)	T23N	R1E	8
	T22N	R1E	35
Lolo Creek (3 transects)	T35N	R2E	14
	T34N	R6E	7
	T35N	R6E	16
Medicine Lodge Creek	T11N	R34E	18
Sawmill Creek	T11N	R26E	10
Squaw Creek	T11N	R17E	28
Summit Creek	T11N	R25E	24
Wet Creek	T10N	R26E	33
Willow Creek	T1N	R40E	19

FINDINGS

Instream flow requirements have already been developed by the Idaho Department of Fish and Game on five of the contract study streams (Cochner 1980). For these streams (Little Wood River, Pahsimeroi River, Lemhi River, Snake River, and Payette River), instream flow water right requests have been prepared, and copies of the requests and supporting flow duration information can be found in Cochner and Mabbott (1981).

The Little Wood River request was submitted to the 1981 Idaho Legislature, and the requested water right was granted for the protection of fish and wildlife resources from Silver Creek downstream to Dietrich Diversion.

Water right requests for Pahsimeroi River and Birch Creek have been submitted to the Idaho Water Resource Board and are undergoing review by the Board. Requests for the Lemhi, Snake, and Payette rivers have been processed through the initial stages with the Department of Fish and Game and are on a priority list to be submitted to the Idaho Water Resource Board.

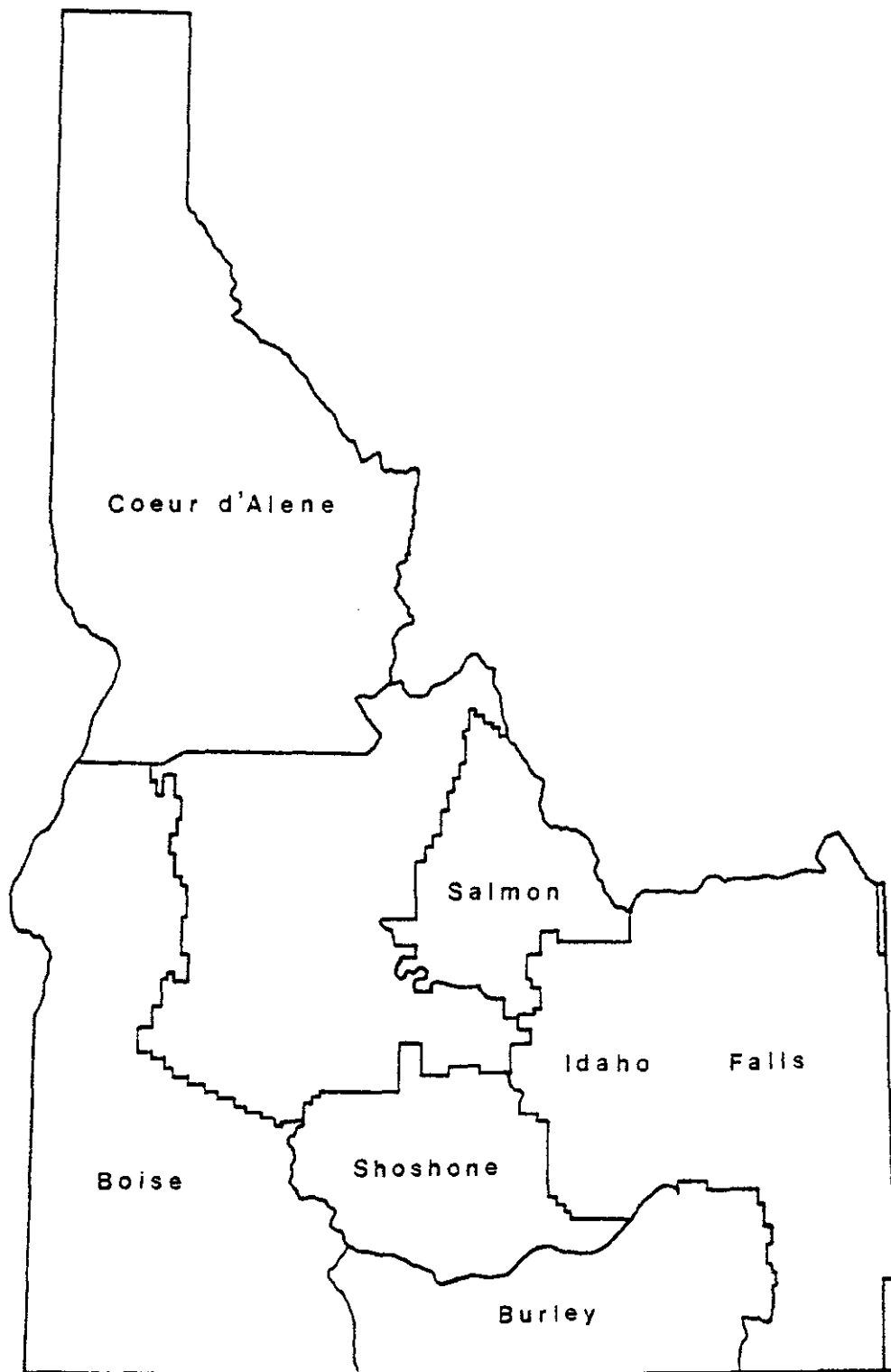
Streams studied during the 1980 and 1981 field seasons will be discussed by B.L.M. administrative district in this report (Fig. 1).

COEUR D'ALENE DISTRICT

American River

American River joins Red River approximately two miles south-east of Elk City, Idaho, in forming the South Fork of the Clearwater River (Fig. 2). Two study sites were established; the lower transect is 1.2 miles upstream from the confluence of Red and American rivers, and the upper transect is located 3.0 miles upstream from Forest Road No. 443. Cobble (2.6 to 9.8 in) is the dominant substrate, with interspersed boulders, gravel, and sand.

Game fish populations include rainbow trout, cutthroat trout, brook trout, steelhead trout, chinook salmon, bull trout, and mountain whitefish. The drainage offers spawning and rearing habitat for both chinook salmon and steelhead trout. Wildlife populations include muskrat, beaver, otter, and mink.



Madre i. Administrative districts of the Bureau of Land Management in Idaho.

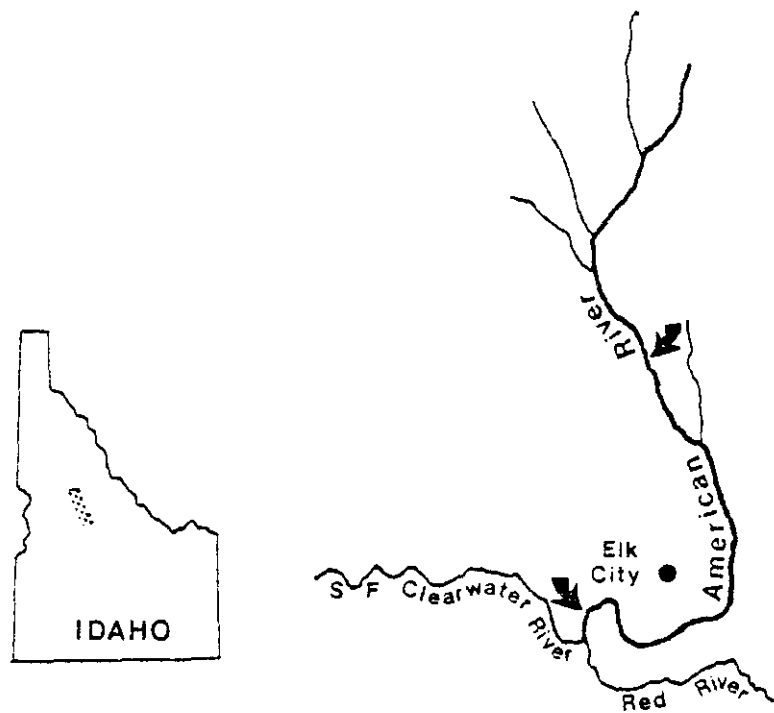


Figure 2. Location of instream flow study sites on American River.

The instream flows requested for American River from the East Fork to Elk Creek, based upon habitat requirements for game fish, are a base flow of 6 cfs for juvenile rearing throughout the year, a spawning flow of 23 cfs from April through June, and for egg incubation and alevin survival in July, 10 cfs is needed. For the section of American River downstream from Elk Creek, the rearing flow requested is 14 cfs from 16 July through March, and a spawning and incubation flow of 63 cfs from April through 15 July.

Big Canyon Creek

Big Canyon Creek enters the Clearwater River at river mile 35.3 (Fig. 3). One study site was established approximately 150 yards upstream from the confluence with Little Canyon Creek. In the lower reaches of the stream, cobble is the dominant substrate, but some bedrock and boulders are interspersed. Spawning gravels for salmonids are found further upstream. Big Canyon Creek drains the Camas Prairie farmlands and shows the effects of intensive agricultural use. Fine sediment deposits are found throughout the substrate, grazing has moderately impacted the riparian vegetation, and removal of trees and shrubs for farming has increased water temperatures and reduced streamside cover. Wildlife populations using Big Canyon Creek include muskrat, beaver, and mink. Game fish populations include rainbow trout, steelhead trout, and mountain whitefish. The stream is utilized for steelhead spawning and rearing in the middle and upper reaches, but because of marginal temperatures, it appears that juvenile trout move out of the lower section during summer and fall low flow periods.

The requested instream flow, based on spawning and passage requirements for steelhead trout, is 25 cfs in April, May, and June. Secondly, a need exists to keep the marginal habitat in the lower reaches of Big Canyon Creek from deteriorating further and to keep insect and nongame forage fish production viable. An easily-attainable instream flow of 2.0 cfs is requested to support this need from July through March.

Cottonwood Creek

Cottonwood Creek enters the Salmon River at river mile 15.5 (Fig. 4). One transect was established approximately 400 yards upstream from the mouth. Boulders and cobble dominate the substrate.

Game fish populations include rainbow trout, steelhead trout, and chinook salmon. Steelhead trout and chinook salmon utilize the lower section of the stream for spawning and juvenile rearing. Wildlife populations include muskrat, beaver, and mink.

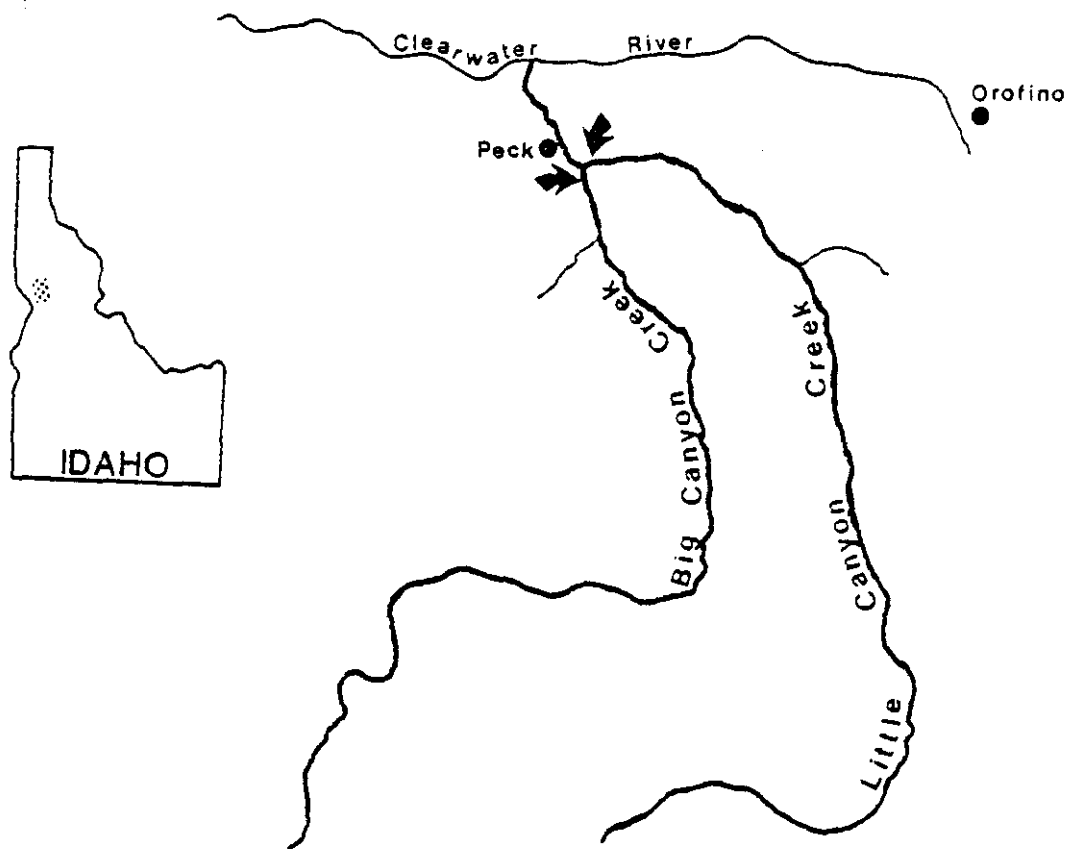


figure 3. Locations of instream flow study sites on Big Canyon and Little Canyon creeks.

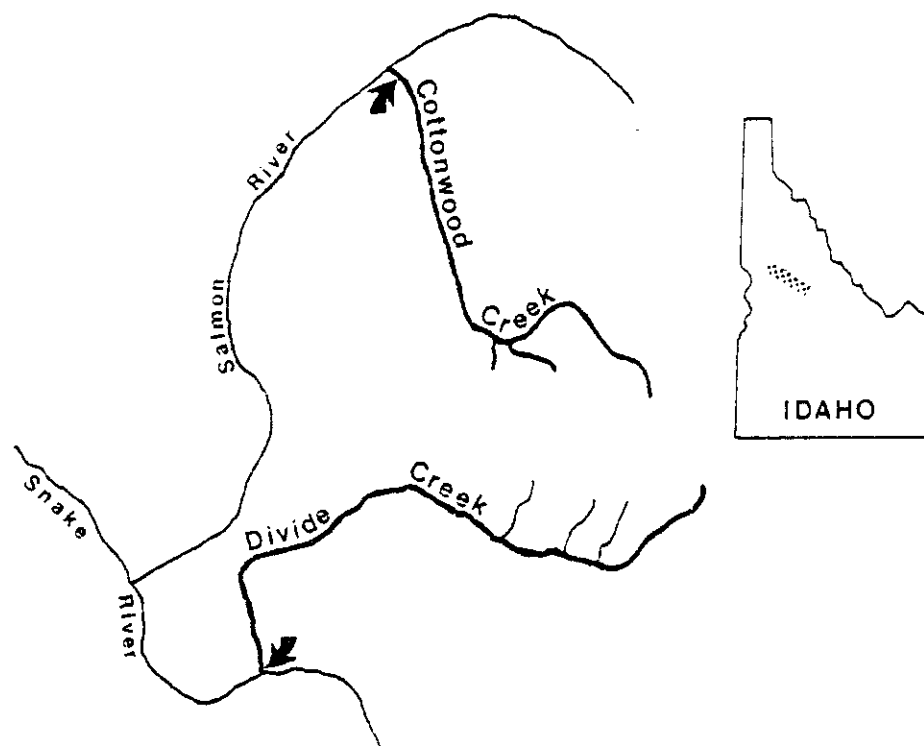


Figure Locations of instream flow study sites on Cottonwood and Divide creeks.

Flows were measured in 1980 and 1981, but due to access problems the third calibration flow was not obtained. The required stream flow will be developed in 1982.

Divide Creek

Divide Creek enters the Snake River at river mile 193.2, approximately five miles upstream from the confluence with the Salmon River (Fig. 4). A study site was established approximately 50 yards upstream from the mouth, incorporating the transect set up by B.L.M. personnel. It has a boulder and cobble substrate, dense riparian vegetation, and approximately 75% canopy on the lower reaches of the stream.

Game fish populations include rainbow trout, mountain whitefish, steelhead trout, and chinook salmon. Both steelhead trout and chinook salmon utilize the lower section of the stream for spawning and juvenile rearing. Wildlife populations include muskrat, beaver, and mink.

This stream was measured once in 1980 and twice in 1981, but additional work is needed to calibrate the flows for determining the instream flow needs. This will be done in 1982.

John Day Creek

John Day Creek enters the Salmon River at river mile 72.0 (Fig. 5). A study site was established 0.8 mile upstream from Highway 95. Boulders and cobble are the major substrate types.

Steelhead trout heavily utilize the stream for spawning and rearing. Rainbow and cutthroat trout are also found in the stream. Wildlife populations include muskrat, beaver, and mink.

Because of potential hydropower development on John Day Creek, this stream was processed in the fall, 1981, and the data was presented to Idaho Department of Fish and Game personnel, who later presented it to the hydropower applicant. The instream flow determination was for a spawning flow of 22 cfs from 15 April through July, and a rearing flow of 6 cfs the rest of the year, based primarily on steelhead trout habitat needs. That is the flow recommendation from the biological perspective, and is the regimen presented here. However, the Idaho Department of Fish and Game accepted a compromise flow regime of 3.5 cfs from 16 July to 15 April, and 12 cfs from 16 April to 15 July to facilitate hydropower development. To make the lower flows acceptable, the hydropower applicant agreed to place habitat improvement structures in the stream to increase spawning success.

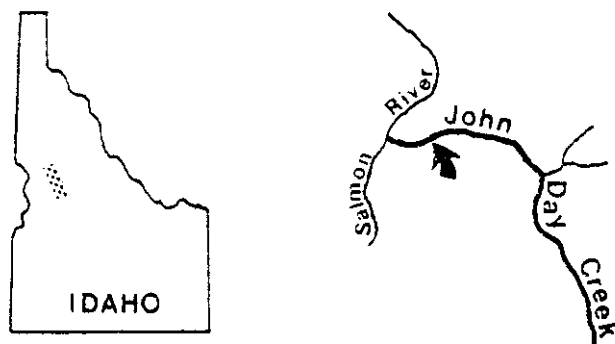


Figure Location of instream flow study site on John Jay Creek.

Latour Creek

Latour Creek enters the Coeur d'Alene River at river mile 160.3 (Fig. 6). A study site was established approximately 1/2 mile upstream from the Twin Crags bridge, which crosses Latour Creek 11 miles south of Cattalo. Cobble and boulder are the major substrate types, interspersed with gravel.

Game fish populations include cutthroat trout and brook trout. Portions of the stream are utilized for spawning by cutthroat trout inhabiting Coeur d'Alene Lake. Wildlife populations include muskrat, beaver, otter, and mink.

The instream flows requested for Latour Creek, based upon game fish rearing, spawning and egg incubation requirements, are 25 cfs from 1 April to 15 July, and 6 cfs during the rest of the year.

Little Canyon Creek

Little Canyon Creek enters Big Canyon Creek approximately 2.5 miles from the Clearwater River (Fig. 3). One study site was established 0.1 mile upstream from the confluence. The substrate in the lower reaches of the stream is primarily cobble, with bedrock slabs and boulders interspersed throughout. Salmonid spawning gravels are found further upstream. Little Canyon Creek drains the Camas Prairie farmlands and shows the same effect from agricultural use as Big Canyon Creek. Increased sediment deposits, elevated water temperatures, and reduced water quality have resulted from erosion and removal of riparian and watershed vegetation.

Wildlife populations found in Little Canyon Creek include muskrat, beaver, otter, and mink. Game fish species include rainbow trout, steelhead trout, and mountain whitefish. Steelhead fry and smolts have been stocked in attempts to bolster existing populations (Ron Lindland, personal communication). The stream is used for steelhead spawning and rearing in the middle and upper reaches, but because of marginal temperatures, it appears that juvenile trout avoid the lower reaches during summer and fall low flow periods.

The requested instream flow, based on steelhead passage and spawning requirements, is 12 cfs in April, May, and June. During the rest of the year a need exists to keep the marginal habitat in the lower reaches of Little Canyon Creek from deteriorating further, and to keep insect and nongame forage fish production viable. One cfs is requested to support this need from July through March.

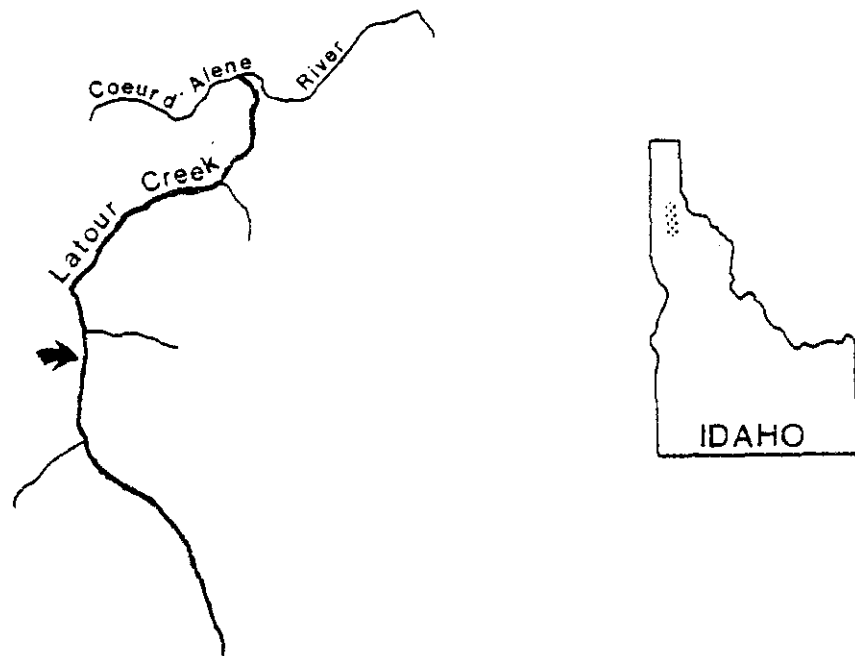


Figure 6. Location of instream flow study site on Latour Creek.

Little Salmon River

The Little Salmon River enters the Salmon River at Riggins, Idaho (Fig. 7). Two study sites were established; the upper located 13.7 miles upstream from Rapid River, and the lower located 1.5 miles upstream from Rapid River. The dominant substrate at each site was boulder and cobble.

Game fish populations include rainbow trout, cutthroat trout, brook trout, steelhead trout, chinook salmon, bull trout, and mountain whitefish. Wildlife populations include mallard ducks, muskrat, beaver, otter, and mink.

A required stream flow will be calculated for the Little Salmon River upon the completion of adequate hydraulic simulation of the stream's characteristics. Although we have three calibration flows for each study site, it was not possible to get through the hydraulic simulation program because of built-in default mechanisms that truncate excessive velocities. Steep slope may be the cause of the default, so additional work will have to be done to correct these difficulties.

Salmon River (downstream from Whitebird)

The methodology for large unwadeable streams requires additional manpower and a jet boat with specially-mounted equipment for completion of instream flow work. The Salmon River will be processed during 1983, when the number of wadeable streams is reduced (11 scheduled) and more time will be available.

Lolo Creek

Lolo Creek enters the Clearwater River at river mile 54.0 (Fig. 8). Three transects were established; the lower near the mouth, the middle transect 0.1 mile downstream from the mouth of Eldorado Creek, and the upper transect 1.0 mile downstream of Yoosa Creek. Cobble is the dominant substrate at each study site.

Game fish populations include rainbow trout, cutthroat trout, brook trout, mountain whitefish, steelhead trout, and chinook salmon. Steelhead trout utilize the upper reaches and tributaries for spawning, and the entire stream for juvenile rearing. Chinook salmon may be restricted by the falls near Musselshell Creek. Wildlife populations include muskrat, beaver, and mink.

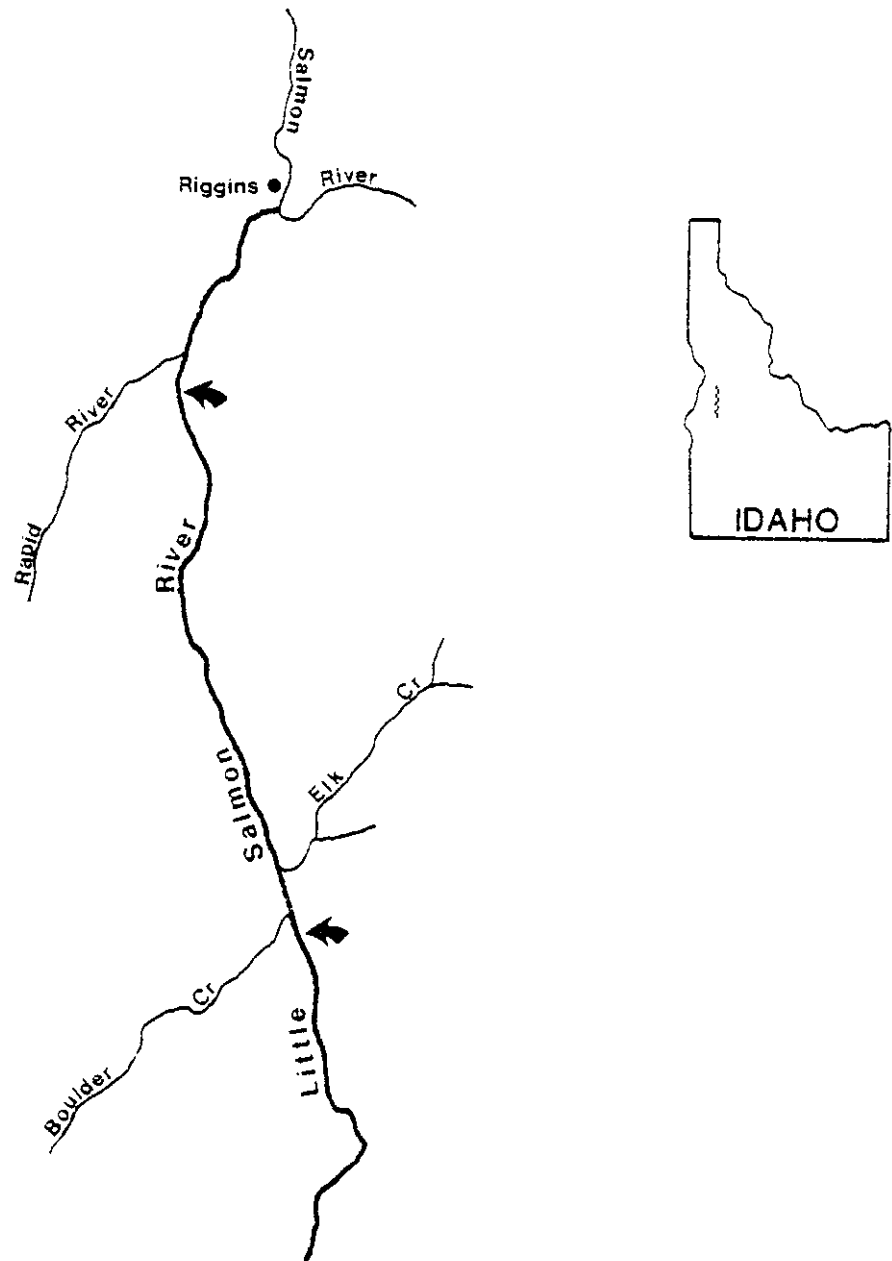


Figure 7. Locations of instream flow study sites on Little Salmon River.

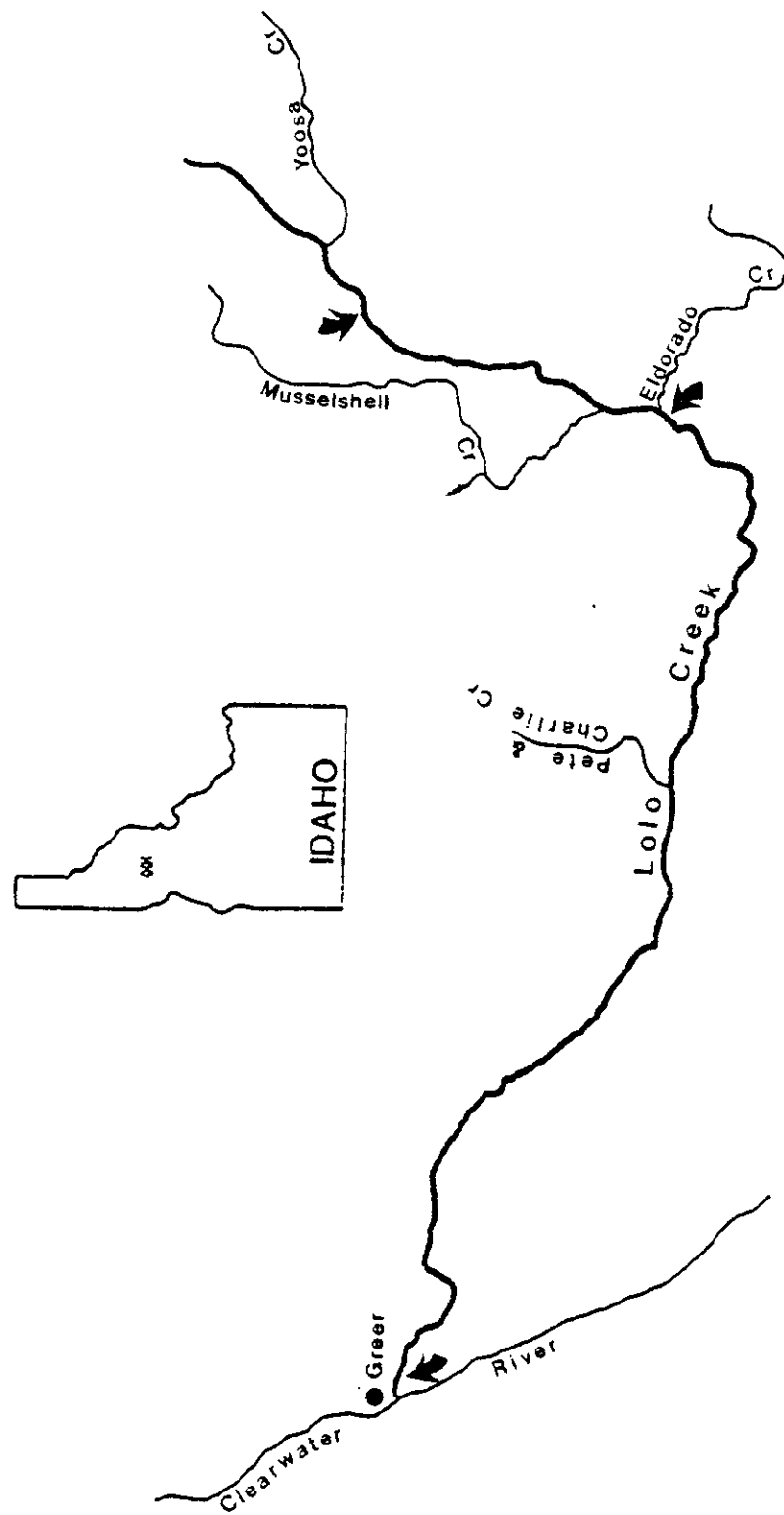


Figure 8. Locations of instream flow study sites on Lolo Creek.

Instream flow recommendations are being made for three sections of Lolo Creek. The upper section from Yoosa Creek downstream to Eldorado Creek has recommended flows of 40 cfs from 1 April to 15 July, and 15 cfs from 16 July to 31 March each year. In the middle section between Eldorado Creek and Pete-and-Charlie Creek, the recommended instream flows are 40 cfs for the spawning and incubating period of 1 April to 15 July, and 20 cfs for the rest of the year. From Pete-and-Charlie Creek to the mouth, the requested flow regime is 45 cfs for April through July, and 30 cfs during the remaining part of the year.

IDAHO FALLS DISTRICT

Beaver Creek

Beaver Creek drains the south slopes of the Continental Divide before flowing into Camas Creek near Camas, Idaho (Fig. 9). Both streams flow through very thick Quaternary alluvial deposits, percolating water into the substrate before Camas Creek sinks into the Snake River plain aquifer. Irrigation and seepage often dry up lower Beaver Creek in the summer. Geologically, this area has a complex history of faulting and folding of Tertiary and Cretaceous sandstone, shale, and limestone deposits, with later (Pleistocene) lava flows. The study site is located in a shallow canyon carved through these lava flows approximately one mile downstream from Rattlesnake Creek near Spencer. The watershed in the Targhee National Forest is a sparse pine-fir mix that gives way to sagebrush-grass communities at lower elevations. The riparian habitat varies from dense willow and grasses above Spencer to sagebrush in the lower reaches. Livestock grazing has a moderate impact on the riparian stability.

Game fish populations include rainbow, cutthroat, and brook trout. Brook trout were observed spawning near the study site on the 16 October 1982 visit. Wildlife populations include mallard duck, beaver, mink, muskrat, and otter.

The instream flow recommendation for Beaver Creek is eight cfs for rainbow trout rearing habitat needs between 1 December and 15 April, and 1 August to 31 September. During spring spawning and incubation (15 April-31 July), 30 cfs is recommended. In the fall (1 October-30 November), 10 cfs is recommended for brook trout spawning.

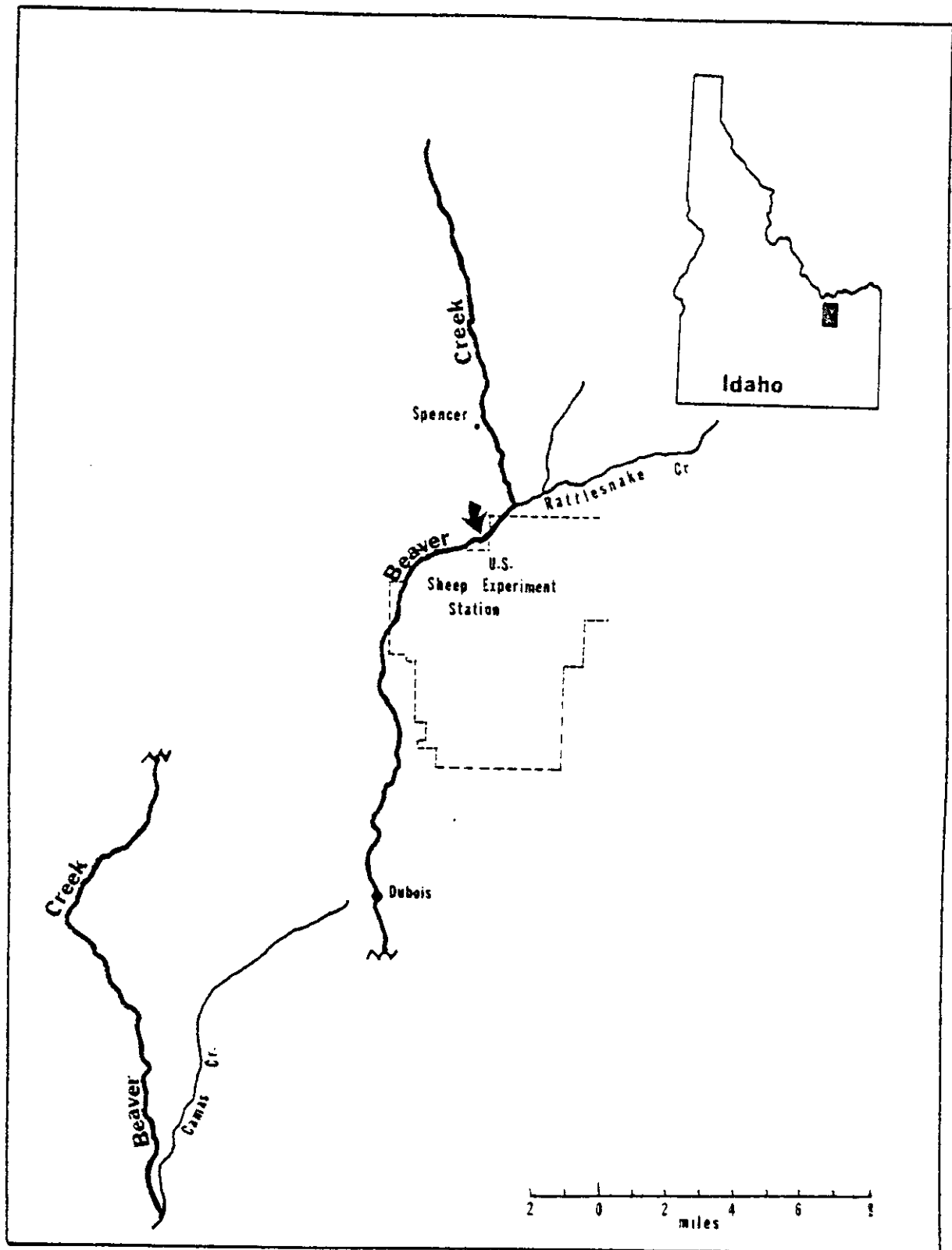


Figure 9. Location of instream flow study site on Beaver Creek. 21

Birch Creek

Birch Creek drains the eastern slopes of the Lemhi range, and the western slopes of the Birch Creek range before sinking into the Arco desert. Most of the drainage is in sagebrush-dominated semi-arid climate, with forested areas found in the high elevation west and north-facing slopes. A Pleistocene lava plug near Skull Canyon divides the stream into two water types. The upper valley has a straight response to precipitation and runoff, whereas the lower reach receives strong spring influence near Kaufman Guard Station that comes from a two-year delay in groundwater patterns. From this area downstream, there is a continual seepage of water through Quaternary alluvium before Reno irrigation canal diverts the entire channel near Reno Point. Study sites are located just downstream from the highway bridge at Kaufman Guard Station and 0.1 mile upstream from Reno Canal (Fig. 10).

Game fish species found in Birch Creek include rainbow trout and brook trout. Mallard duck, muskrat, and mink are among the wildlife populations utilizing Birch Creek.

During 1980, the B.L.M. prepared a request for an instream flow near the Reno ditch. After a public hearing in November, 1981, the Water Resource Board withdrew the request. Because the status of this action is unclear, an instream flow request is not being presented in this report. After clarification and guidance from the B.L.M., a decision will be made concerning Birch Creek instream flows.

Little Lost River and Sawmill Creek

The Little Lost River is formed by the confluence of Sawmill Creek and Summit Creek (Fig. 11), and flows in a southerly direction for approximately 40 miles before it sinks into the Arco desert south of Howe, Idaho. The study site is located near the Clyde School downstream from Wet Creek. Sawmill Creek drains the west side of the Lemhi Range and is the primary headwater tributary to the Little Lost River. The study site for this stream is located approximately two miles downstream from the Salmon National Forest boundary. The riparian zone is dominated by willows and water birch, with cottonwoods, sagebrush, and grasses interspersed. These are surface runoff streams that tend to lose water at lower levels through percolation into the very thick Tertiary alluvium that dominates the drainage geologically.

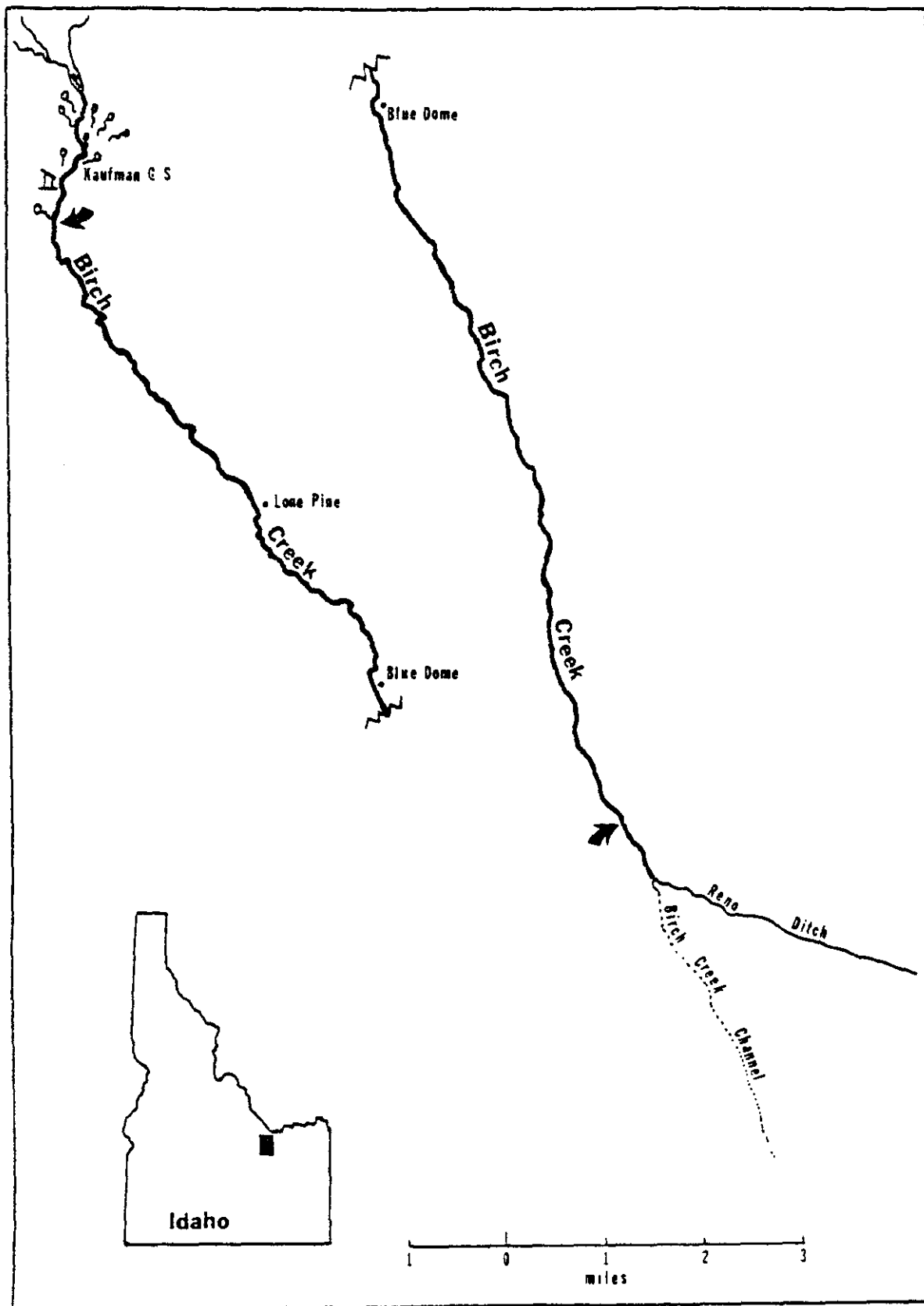


Figure 10. Location of instream flow study sites on Birch Creek. 23

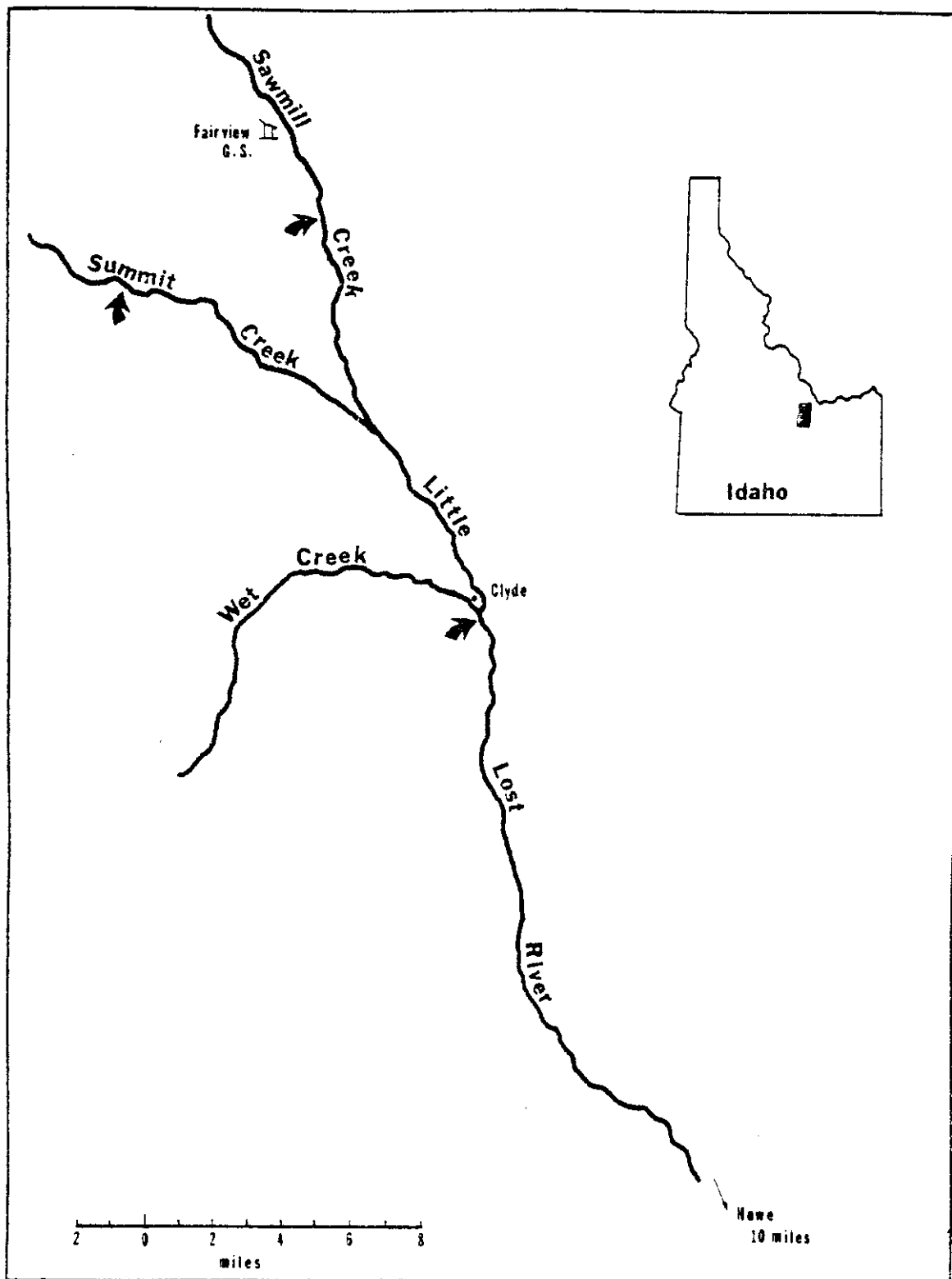


Figure 11. Location of instream flow study sites on Sawmill Creek, Summit Creek, Wet Creek and the Little Lost River.

Game fish populations include rainbow trout, cutthroat trout, brook trout, and bull trout. Rainbow and brook trout are introduced species. Wildlife populations include mallard duck, muskrat, beaver, otter, and mink.

The instream flow recommendation to adequately protect juvenile trout rearing for the Little Lost River from Big Spring Creek to Wet Creek is 23 cfs from 1 August through 15 April. From mid-April through July, 43 cfs is recommended to protect spawning requirements, egg incubation, and alevin survival.

Sawmill Creek should have an instream flow of 18 cfs to protect nursery habitat for juveniles from 1 August through 30 September, and from 1 December through 30 April. A slightly higher flow of 19 cfs should be adequate for brook trout spawning in October and November, and the spawning flow for rainbow and cutthroat trout is recommended as 43 cfs during May, June, and July.

Medicine Lodge Creek

Medicine Lodge Creek drains the west and south slopes of the continental divide and sinks into the Snake River Plain aquifer near Dubois. After the stream enters the floodplain downstream from Indian Creek, it has a continuous seepage of water into the alluvium and is also diverted for irrigation before the sinking occurs. Deposits of Pliocene volcanics and block faulting events are mixed with very old dolomite and limestone, and volcanic ash and flow rock deposits. The watershed is in the Targhee National Forest, and the runoff is highly interrelated with ground water to produce stable late summer and fall flows. Agricultural use, primarily grazing, is the dominant land use and some riparian areas are severely eroded by overgrazing. The study site is located within a B.L.M. enclosure one mile upstream from Middle Creek (Fig. 12).

Cutthroat, rainbow, and brook trout inhabit Medicine Lodge Creek. Native cutthroat trout utilized the study site for spawning in April 1981 (Virgil Moore, personal communication). Wildlife populations include mallard duck, muskrat, beaver, and mink.

The instream flow recommendations, based upon rearing and spawning requirements for game fish, are 35 cfs from 1 April through July, and 22 cfs for the rest of the year.

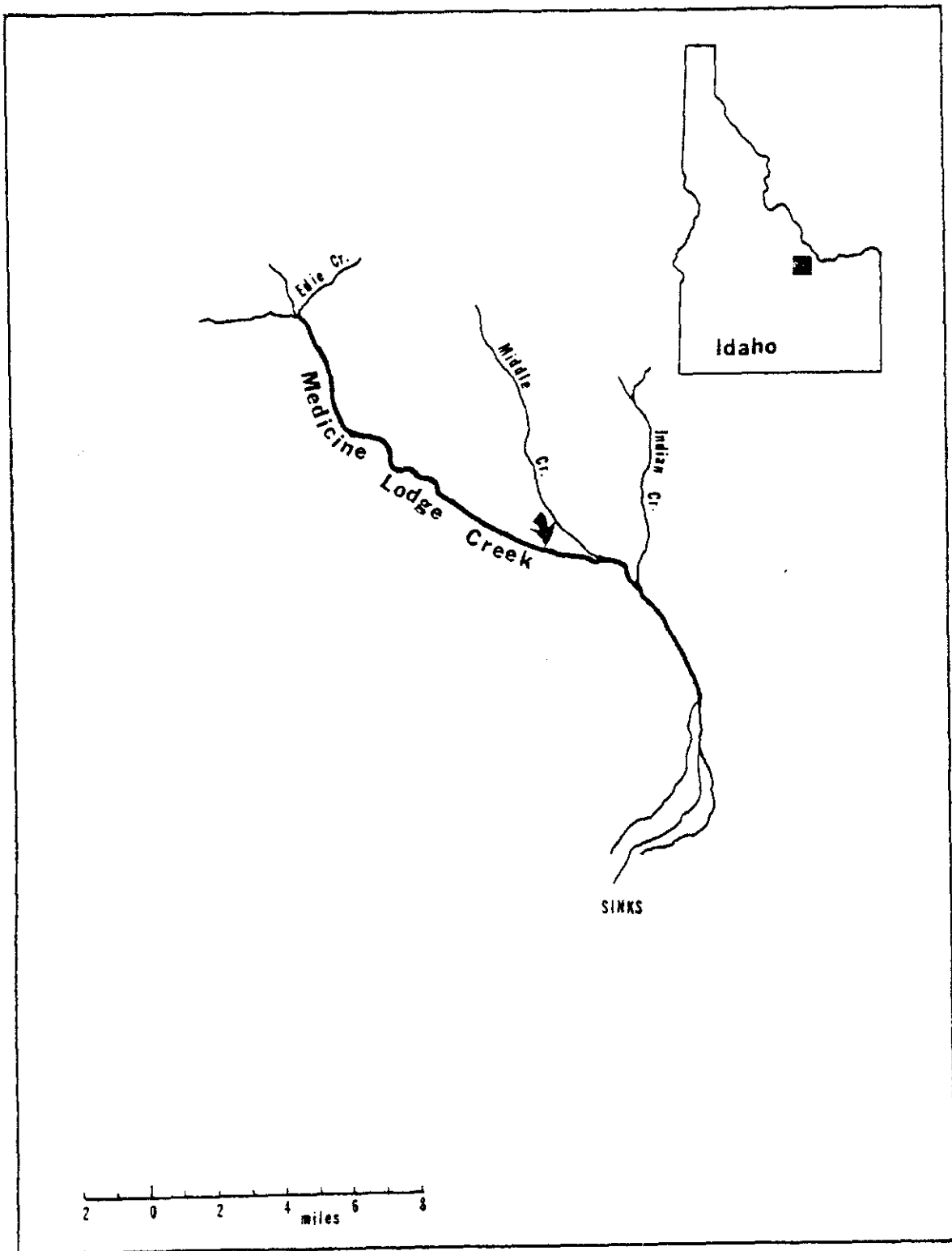


Figure 12. Location of instream flow study site on Medicine Lodge Creek.

Summit Creek

Summit Creek is a spring-fed tributary of the Little Lost River (Fig. 11) that originates in Quaternary alluvium and mixes with surface runoff from the southeast side of the Donkey Hills. Morphologically it skirts around the edge of the alluvial fan until near its confluence with Sawmill Creek. The study site is located immediately downstream from the B.L.M. cattle enclosure.

Game fish populations in Summit Creek include rainbow trout and brook trout. Barney Hot Springs and Moffett Creek, tributary to Summit Creek, have a variety of tropical fishes, probably resulting from a release of aquarium fishes many years ago. Canada goose, mallard duck, muskrat, and mink are among the wildlife populations utilizing Summit Creek.

The instream flow recommendation for this spring-fed stream is four cfs throughout the year. This flow should be adequate to protect habitat needs for all trout activities in Summit Creek.

Wet Creek

Wet Creek is a tributary to the Little Lost River entering within 0.1 mile of the Clyde School, which is located 26.4 miles north of Howe (Fig. 11). Geologically, it is similar to the Little Lost River, but additional deposits of Paleozoic detritus occur because of complex faulting within the alluvial gravels. It drains the eastern slopes of the Lost River range and the Hawley Mountains and picks up additional water from Dry Creek diversion. The study site is located 0.1 mile upstream from this inflow, within a B.L.M. cattle enclosure and day use area. Surface and ground waters are interrelated and account for steady flows throughout the summer. Riparian habitat outside the enclosure is used heavily by grazing cattle, causing moderate bank erosion. Willows, water birch, and grasses are the dominant vegetative types. The watershed is sparse conifers found in the draws, and junipers dominating the higher elevation south and west slopes.

Game fish populations include rainbow trout, cutthroat trout, brook trout, and bull trout. Wildlife species that utilize Wet Creek include mallard duck, muskrat, beaver, and mink.

The instream flow required to adequately maintain game fish populations is 12 cfs year around.

Willow Creek

Willow Creek is a tributary to the Snake River entering near Idaho Falls at river mile 796.5. In its lower reaches, several diversions take much of the water for agricultural use during the irrigation season. Seasonal floods were common until completion of Ririe Dam in the late 1970's. The study site is located up-stream from the reservoir and 0.3 miles upstream from Kepp's Crossing (Fig. 13). Geologically, Willow Creek carves its way through Quaternary loess and alluvium, sedimentary deposits and Cretaceous shale, sandstone, and limestone. In the lower reaches, pyroclastic and flow rock volcanics of the Pliocene epoch overlay the older sedimentary deposits. Willows and grasses are the most abundant streamside vegetation downstream from the watershed. The watershed is a mixture of aspen patches, sparse fir-pine forests, and junipers. The primary land use is dry-land agriculture, which creates heavy erosion losses and severely impacts the stream environment.

Game fish populations in Willow Creek include rainbow, brown, cutthroat, and brook trout. Wildlife species known to utilize this stream include Canada goose, mallard duck, muskrat, beaver, and mink.

The required instream flows are based upon game fish requirements for rearing space, and spawning and egg incubation needs. From 16 July through September, and December through March, a rearing flow of 22 cfs is recommended. For the fall-spawning fish, 36 cfs should be adequate in October and November, and for spring spawners, 50 cfs is requested from 1 April through 15 July.

SALMON DISTRICT

Big Springs Creek

Big Springs Creek flows less than six miles from source to mouth before it enters the Lemhi River approximately 3.3 miles north of Leadore (Fig. 14). The transect is located 1.2 miles upstream from the mouth on land owned by Mr. Sam McKinney. Geologically, the Lemhi Valley, including Big Springs Creek, is in a Holocene floodplain with silt and silt loam deposits over gravel bounded by Quaternary alluvial fans. As described by its name, Big Springs Creek is primarily spring influenced, which is atypical of the general ground-water-influenced tributaries of the Lemhi River. Riparian habitat is characterized by grasses and abundant willow patches. Bank stability is heavily impacted by cattle grazing. The land ownership is almost all private and primarily in agricultural use. In terms of fish biomass, this stream is one of Idaho's most productive, and has been intensively studied by personnel from the Cooperative Fishery Research Unit at the University of Idaho.

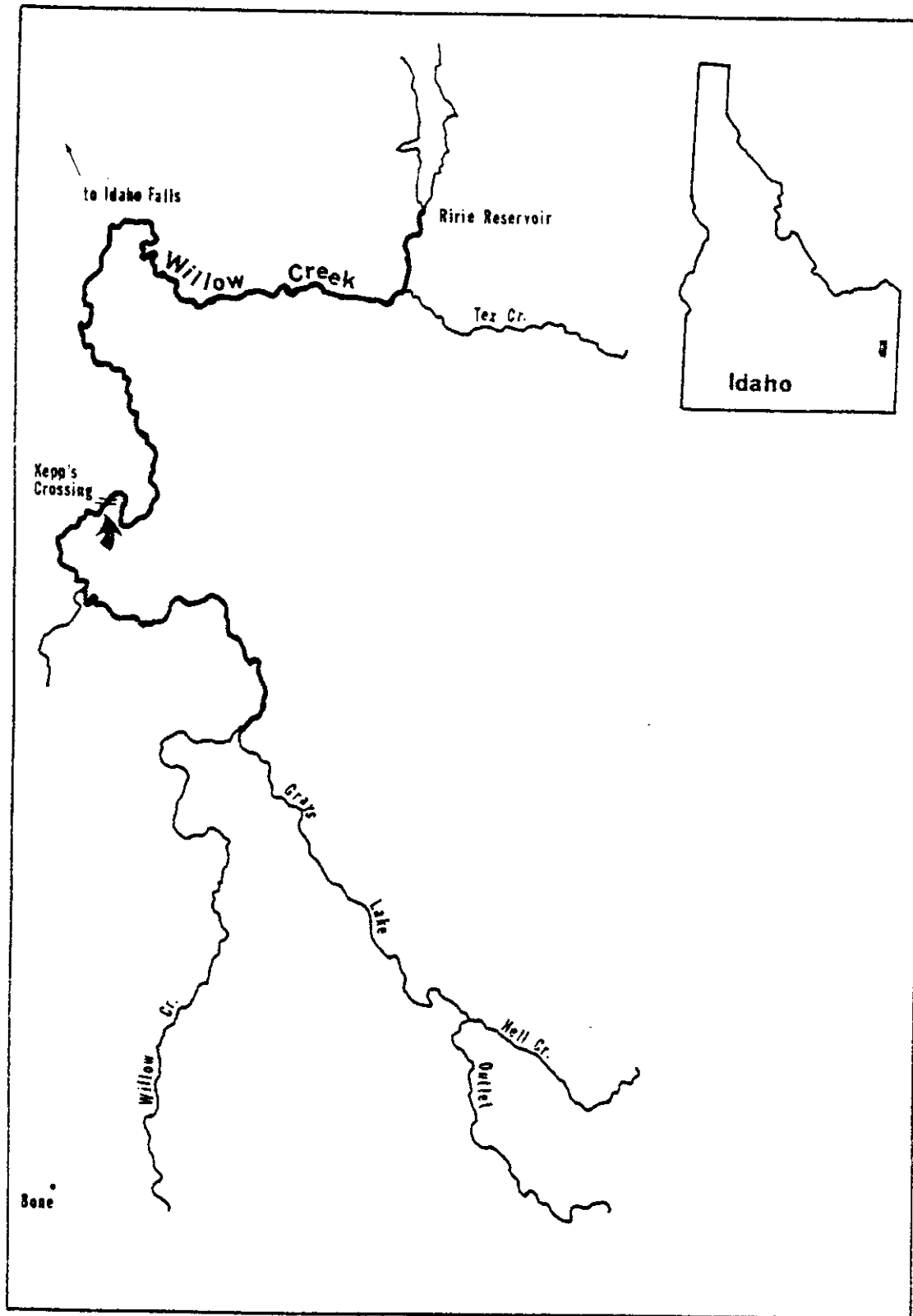


Figure 13. Location of instream flow study site on Willow Creek.

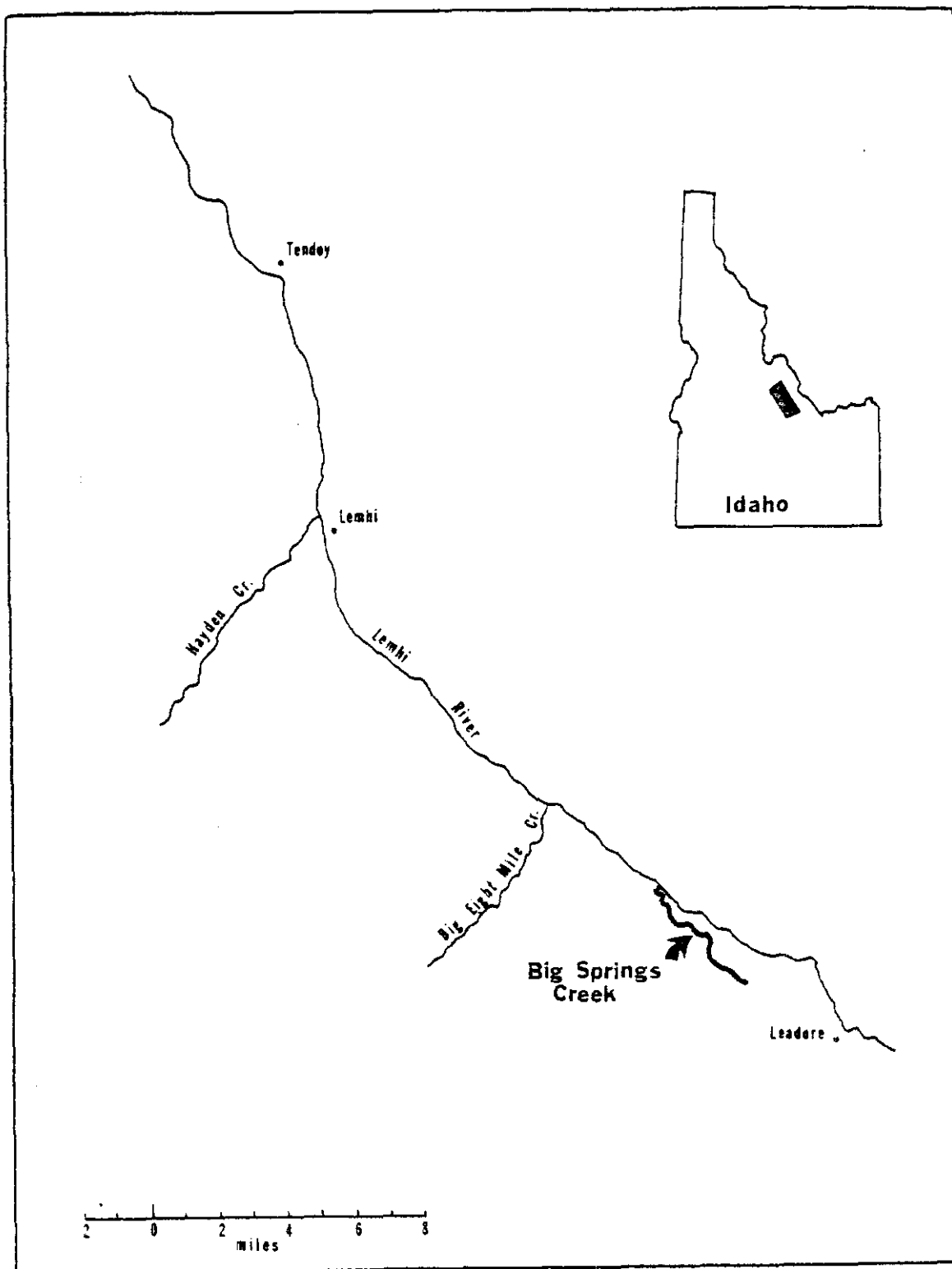


Figure 14. Location of instream flow study site on Big Springs Creek.

Game fish populations include rainbow trout, cutthroat trout, brook trout, steelhead trout, chinook salmon, and mountain whitefish. Big Springs Creek also supports mallard duck, muskrat, beaver, and mink populations.

The recommended instream flows based on game fish rearing, spawning and egg incubation requirements are: 24 cfs from 1 August to 15 April, and 40 cfs from 16 April to 31 July.

East Fork Salmon River and Herd Creek

Both of these streams drain the north slopes of the Boulder Mountains in central Idaho. The area is accentuated with extremely rugged, high elevation peaks formed in Challis volcanics. Herd Creek is a tributary to the East Fork at river mile 10.1. The study site is located in typical habitat, approximately one mile from the mouth. The study site on the East Fork is located up-stream from Herd Creek 1.7 miles. The East Fork flows for 11.8 miles from the study site before it empties into the mainstem Salmon River at river mile 343.0 (Fig. 15). The entire East Fork drainage is in an active earthquake zone, which causes accelerated sediment loads due to landslides. Watersheds in this semi-arid climate are generally not forested except for pockets of timber on north-facing draws. Grazing is the primary use, but some mining and logging do occur. Both drainages are extensively used for winter range by big game animals, and Herd Creek has had intensive riparian management by B.L.M. personnel.

The Department has recognized the remnant chinook salmon population in these streams as vital to the recovery of this species in the upper Salmon River country. Other game fish species include steelhead trout, rainbow trout, cutthroat trout, bull trout, and mountain whitefish. Wildlife populations include mallard duck, muskrat, beaver, otter, and mink.

Instream flow recommendations were prepared from game fish rearing, spawning, and incubation requirements. For the East Fork Salmon River, a rearing flow of 80 cfs is requested from 16 September through 15 April each year. To provide adequate spawning flows, 135 cfs is needed in this stream from 16 April through 15 September. Herd Creek flows are requested at 14 cfs and 30 cfs for the same time period.

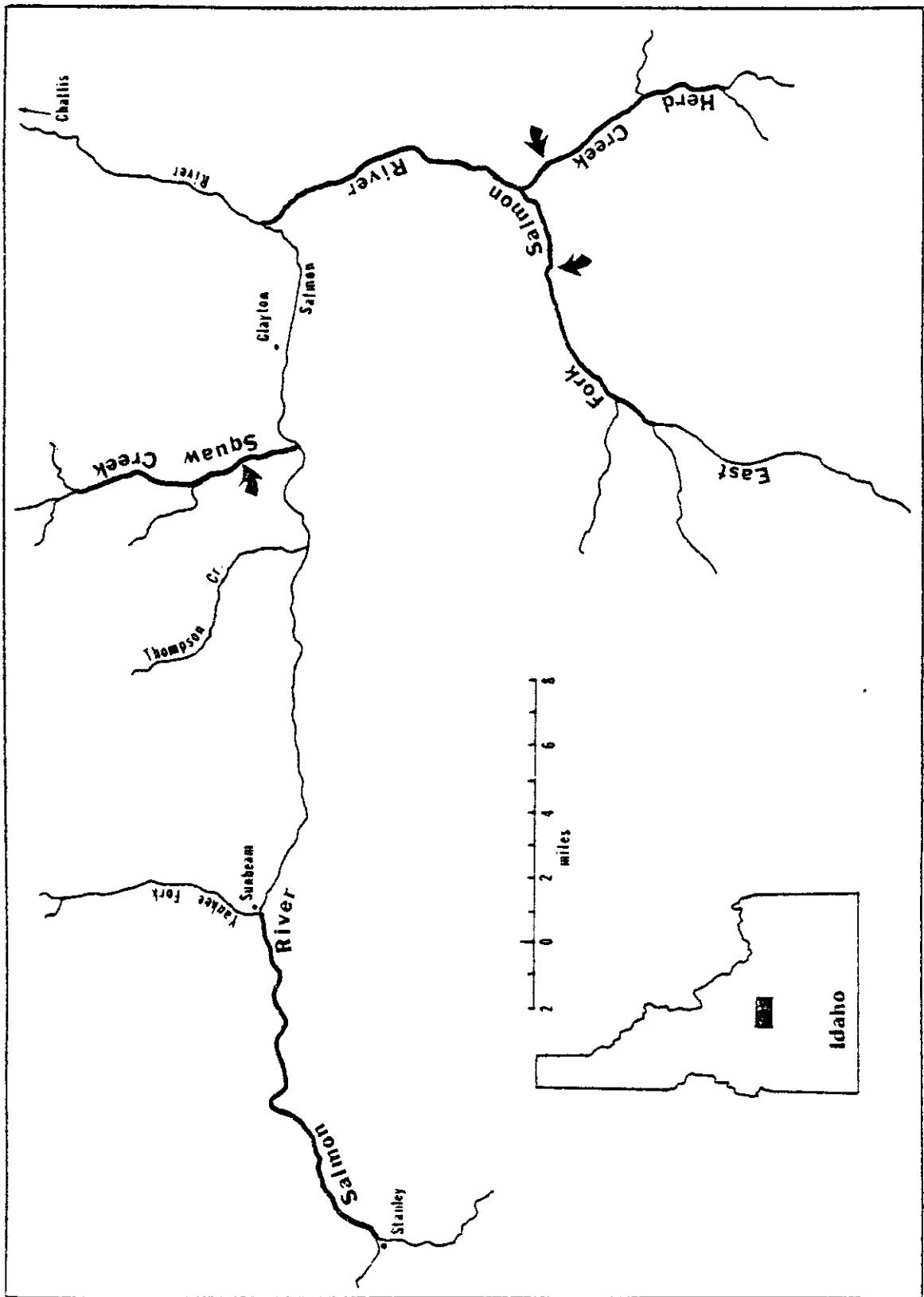


Figure 15. Location of instream flow study sites on Squaw Creek, Herd Creek, and East Fork Salmon River.

Hat Creek

Hat Creek enters the Salmon River at river mile 292.7 (Fig. 16). Access to the study site is via unimproved road from Deer Gulch. From the study site to the mouth (2.5 miles), Hat Creek drainage is unroaded and precipitous, except for a small strip of farmland in the floodplain. Because of limited access to B.L.M. property, the study site is located on private land on Big Hat Creek 0.3 mile above the confluence with Little Hat Creek. The riparian zone is densely covered by willows, water birch, and some dogwoods in the lower reaches. The glaciated headwaters drain the sparsely forested south slopes of the Salmon River mountains. Surface and ground water are highly interrelated and account for good late-summer flows. The complex alluvium slows the runoff. The area is Challis volcanics, which is heavily faulted and characterized by old landslides and structural Quaternary alluvium in the bottom lands. The primary land use is grazing on B.L.M. lands by permit basis.

Game fish populations include rainbow trout, cutthroat trout, steelhead trout, bull trout, and mountain whitefish. A likely passage barrier exists on Hat Creek for salmon migration approximately one mile from the mouth. Wildlife species found in Hat Creek include mallard duck, muskrat, beaver, otter, and mink.

The instream flow regimen recommended for Hat Creek is based upon juvenile rearing needs and spawning and egg incubation requirements. The requested flows are five cfs during the period 1 August to 31 March, and 18 cfs from 1 April to 31 July.

Iron Creek

Iron Creek enters the Salmon River at river mile 285.9 (Fig. 16). One transect has been established 1.3 miles upstream from its mouth on land administered by the State Department of Lands. An improved dirt and gravel road parallels the stream throughout the patched B.L.M., state, and private lands. The watershed is in the Salmon National Forest. In the lower reaches of the valley, the riparian habitat is heavily impacted by grazing and other past practices. In areas not heavily grazed, the banks are stable and well vegetated with grasses, willows, and cottonwood trees. The geology and climate are similar to Hat Creek.

Game fish species found in Iron Creek include rainbow, cutthroat, steelhead, brook, and bull trout, and mountain whitefish. Wildlife populations include muskrat, beaver, otter, and mink.

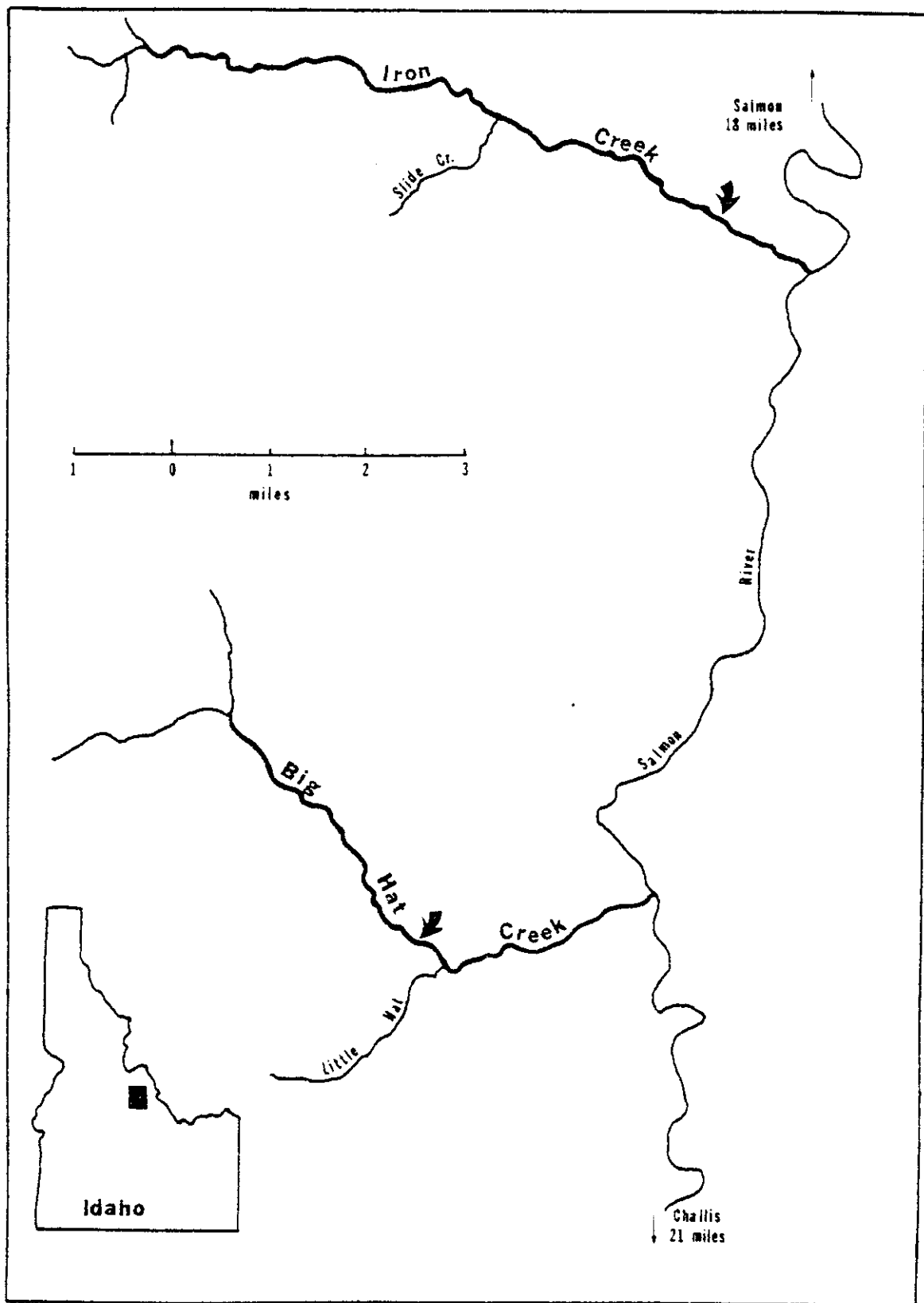


Figure 1 6. Location of instream flow study sites on Iron Creek and Hat Creek.

Recommended instream flows are three cfs for rearing needs from 1 August to 31 March, and 40 cfs for spawning and egg incubation needs from April through July. The requirements for rearing flows appear to be much higher than the three cfs requested, but irrigation withdrawals reduce the carrying capacity much below what would occur under a natural environ. To keep this marginal habitat from further deterioration, the three cfs value is the lowest acceptable value.

Salmon River (upstream from Salmon)

The methodology for large unwadeable streams requires three people and a jet boat equipped with special brackets and sounding reel for lowering the flow meter. In 1983, the reduced number of wadeable streams will allow time to gather the equipment and additional help to measure the Salmon River.

Squaw Creek

Squaw Creek drains the central Idaho mountains, flowing southerly into the Salmon River at river mile 350.7. The climate is classed as semi-arid. The watershed is primarily forested, but sagebrush and grass communities dominate the lower elevation south and west slopes. The surface water is directly related to snowmelt runoff and is highly interrelated with ground water due to extensive faulting. The drainage flows through complex folding and faulting Paleozoic sedimentary rocks, and heavily faulted Challis volcanics. Squaw Creek is located just east of a major epicenter of seismic activity. Numerous large, old and recent landslides have occurred in the drainage, which contribute moderate sediment loads. Grazing has been replaced as the major land use by a massive open pit molybdenum mine and associated activities. The study site is located 0.75 miles from the mouth on private land (Fig. 15).

Squaw Creek supports game fish populations of rainbow, cutthroat, and steelhead trout, chinook salmon, and mountain whitefish. Wildlife populations include muskrat, beaver, and mink.

The instream flow recommendations are nine cfs from 16 July until 15 April, and 45 cfs from 16 April through 15 July. These assessments are based upon juvenile rainbow, steelhead and chinook rearing needs, and spawning and egg incubation requirements for rainbow and chinook.

ACKNOWLEDGEMENTS

This project is funded by the U. S. Department of Interior, Bureau of Land Management. We appreciate the support and guidance from Karl Gebhardt, State Hydrologist. B.L.M. employees Jim Eskett, Dave Fortier, Craig Johnson, and Chuck Keller have provided fishery and riparian habitat information and assistance. Paul Krupin provided information on geology in the Salmon area.

Department personnel who have contributed to the project are: Tim Cochnauer, Brian Cochrane, Carol Frederiksen, Brian Gard, Kate Grinde, Don Kunze, and Mike Stoddard. Several other personnel in Region 6 freely gave a day or two to aid in data collection. Technical assistance on computer software and programming was provided by Bill Pyle at the University of Idaho.

Cochnauer and Mabbott (1981) reported initial flow data and stream descriptions for the nine streams in the Coeur d'Alene District that I worked on in 1981 ^{to} complete the instream flow work. With the authors permission, I excerpted freely from their report.

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APPENDIX

Figure A-1. Instream flow request for maintenance of game fish habitat on American River from the East Fork downstream to Elk Creek.

NAME OF STREAM: American River, a tributary of the South Fork Clearwater River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At the mouth of Elk Creek, Idaho County, NW¼SW¼, Sec. 27, T29N, R8E. THE PROPOSED

STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
6	6	6	23	23	23	10	6	6	6	6	6

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout, salmon and whitefish habitat from the point of requested flow upstream to the East Fork American River.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project--Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The ideal flow would be a bank full discharge throughout the year. Three discharge measurements are available from 26 October 1980 (7.0 cfs), 16 April 1981 (58.5 cfs), and 25 July 1981 (14.1 cfs) which show the requested flow is below the ideal flow.

Figure A-1 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No flow records available for American River.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-2. Instream flow request for maintenance of game fish habitat on American River from Elk Creek downstream to the Red River confluence.

NAME OF STREAM: American River, a tributary of the South Fork Clearwater River. LEGAL

DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED: At

confluence with Red River, Idaho County, SE¼NW¼, Sec. 33, T29N, R8E. THE PROPOSED

STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
14	14	14	63	63	63	63/14	14	14	14	14	14

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout, salmon and whitefish habitat from the point of requested flow upstream to Elk Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or water applications of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its citizens.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project---Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-2 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The ideal flow would be bankful discharge for fish and wildlife habitat needs. Known discharges, measured on 27 October 1980, 16 April 1981 and 25 July 1981, were 19.9, 14.8 and 44.1 cfs respectively. The requested flows are below these discharges during the dates mentioned.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No flow records available for American River.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-3. Instream flow request for maintenance of game fish habitat on Big Canyon Creek from Little Canyon Creek to Nichols Canyon.

NAME OF STREAM: Big Canyon Creek, a tributary to the Clearwater River. LEGAL

DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At the confluence with Little Canyon Creek, Nez Perce County, NW $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 14 T. 36 N., R1W.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sept</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
2	2	2	25	25	25	2	2	2	2	2	2

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and whitefish habitat from the point of requested flow upstream to Nichols Canyon, and to provide passage flows for migrating steelhead trout.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, CF WATER APPLICATION OF EARLIER DATE OR PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quality Needs for Selected Idaho Streams. Job Completion Report. Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-3 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Ideal flow would be a bank full discharge.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

The only flow data available are from the Bureau of Land Management stage-discharge measurements from 1977 to 1981 (seven measurements) and three measurements from the Idaho Department of Fish and Game in 1980 and 1981, relative to the same staff gage.

<u>Date</u>	<u>Stage</u>	<u>Discharge (cfs)</u>	<u>Agency</u>
10/14/77	-	10.0	BLM
09/18/80	2.58	5.68	BLM
10/29/80	2.62	4.08	IDF&G
04/10/81	3.24	53.3	IDF&G
07/23/81	2.68	7.75	IDF&G
07/23/81	2.70	7.94	BLM
09/22/81	-	4.20	BLM
10/19/81	2.60	5.96	BLM
11/27/81	2.70	7.84	BLM

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-4. Instream flow request for maintenance of game fish habitat in John Day Creek from the mouth to East Fork John Day Creek.

NAME OF STREAM: John Day Creek, a tributary to the Salmon River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with the Salmon River, Idaho County, SW¼; SE¼, Sec. 14, T. 26N, R. 1 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
6	6	6	6/22	22	22	22	6	6	6	6	6

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout habitat from the point of requested flow upstream to the East Fork John Day Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quality Needs for Selected Idaho Streams. Job Completion Report. Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-4 Continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Ideal flow would be bank full discharge, as reflected in the mean monthly flow curve (Fig. A-5). The bank full discharge is approximately 4 to 13 cfs greater than the requested flow throughout the year.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available from the gage station described below. Six years of mean monthly flows are graphed with the requested flow overlaid on it (Fig. A-5). The requested flow is available 95% of the year.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION.

The main John Day gage station , operated by the U. S. Forest Service, is located approximately 300 yards downstream from the confluence of the east and south forks of John Day Creek.

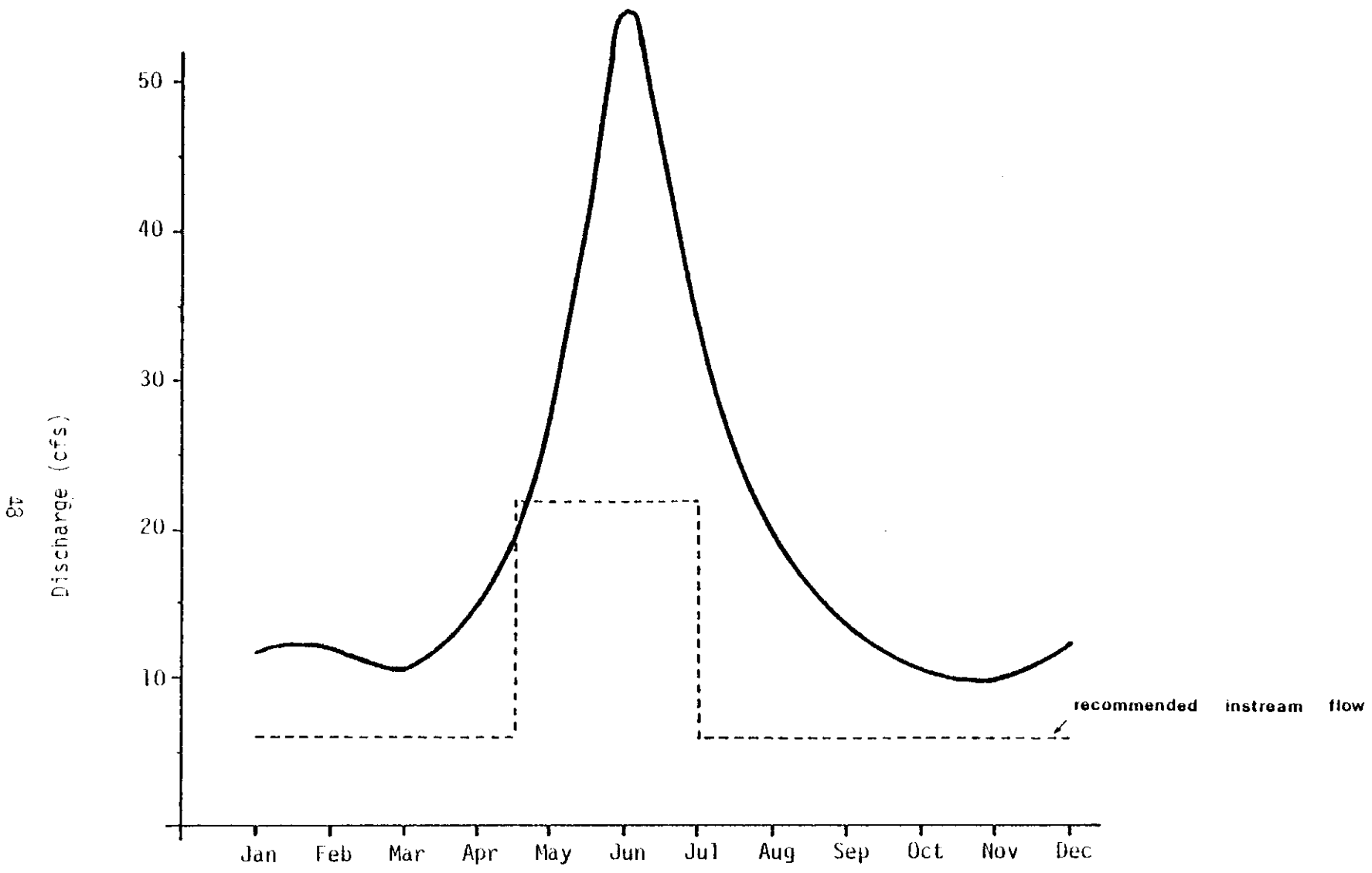


Figure A-5. Mean monthly flow curve for John Day Creek based on six years of flow data from the main John Day gage station.

Figure A-6. Instream flow request for maintenance of game fish habitat in Latour Creek from the Coeur d'Alene River to Butler Creek.

NAME OF STREAM: Latour Creek, a tributary to the Coeur d' Alene River. LEGAL

DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with the Coeur d' Alene River, Kootenai County, SW $\frac{1}{4}$, SE $\frac{1}{4}$ Sec. 32, T. 49 N., R. 1 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
6	6	6	25	25	25	25/6	6	6	6	6	6

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and whitefish habitat from the point of requested flow upstream to Butler Creek in Sec. 3, T. 47 N., R. 1 W.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quality Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-6 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

For optimum fish habitat protection and fish production, a bank full discharge would be the ideal flow.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No records available.

LOCATION OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-7. Instream flow request for maintenance of game fish habitat in Little Canyon Creek from the mouth to an unnamed stream approximately six miles upstream.

NAME OF STREAM: Little Canyon Creek, a tributary to Big Canyon Creek.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Big Canyon Creek, Nez Perce County, NW¼NE¼, Sec. 14, T. 36 N., R. 1 W.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
1	1	1	12	12	12	1	1	1	1	1	1

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and mountain whitefish habitat from the point of requested flow to an unnamed stream in Sec. 27, T. 36 N, R. 1 E., entering from the northeast approximately six miles upstream.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-7 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Ideal flow would be a bank full discharge.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Limited flow data is available from the Bureau of Land Management and Idaho Department of Fish and Game since 1977. Stage-discharge measurements have been taken as part of a monitoring program by the BLM. No conclusion has been drawn from this information, but it is provided to show flows relative to the requested flow.

<u>Date</u>	<u>Stage</u>	<u>Discharge (cfs)</u>	<u>Agency</u>
10/13/77	-	8.3	BLM
09/18/80	1.2	4.64	BLM
11/12/80	1.36	6.11	IDF&G
04/13/81	-	21.36	IDF&G
04/14/81	1.68	24.9	BLM
07/22/81	1.17	2.82	IDF&G
07/23/81	1.19	2.95	BLM
09/22/81	-	2.3	BLM
10/19/81	1.28	4.04	BLM
11/27/81	1.42	5.89	BLM

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-8. Instream flow request for maintenance of game fish habitat in Lola Creek from the mouth to Pete-and-Charlie Creek.

NAME OF STREAM: Lolo Creek, a tributary of the Clearwater River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with the Clearwater River, Clearwater County, SW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 14, T35N, R2E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
30	30	30	45	45	45	45	30	30	30	30	30

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and whitefish habitat from the point of requested flow upstream to Pete and Charlie Creek in Sec. 21, T34N, R5E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

'Figure A-8 Continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The ideal flow would be bankful, or above 50 cfs, even during low flow months, according to mean monthly flow information.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available for 1980 and 1981 water years only. This marginally useful information is offered as supporting evidence (Figure A-9), but should be treated cautiously because hydrologically, two years is a short time period.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

Gage station #13339500 near Greer, Idaho County, NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$, Sec 14, T35N, R2E.

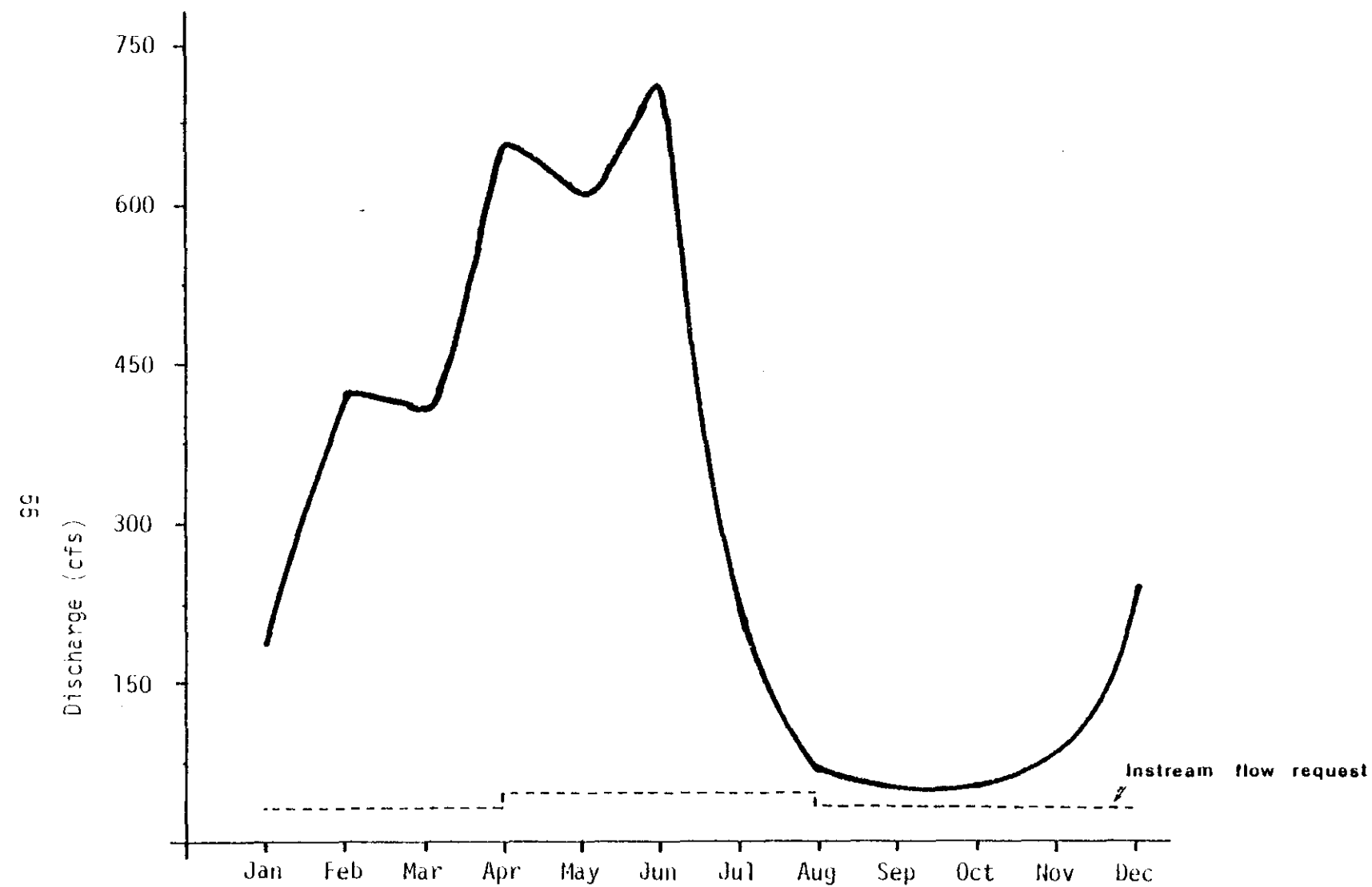


Figure A9. Mean monthly flow curve for Lolo Creek based on two years of flow data from USGS gaging station #13-339500.

Figure A-10. Instream flow request for maintenance of game fish habitat in Lola Creek from Pete-and-Charlie Creek upstream to Eldorado Creek.

NAME OF STREAM: Lola Creek, a tributary to the Clearwater River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Pete and Charlie Creek. Clearwater County. NE $\frac{1}{4}$ NW $\frac{1}{4}$. Sec. 21.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
20	20	20	40	40	40	40/20	20	20	20	20	20

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and whitefish habitat from the point of requested flow upstream to Eldorado Creek, Sec. 18, T34N, R6E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS

PROPOSED: See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The only known discharge measurements, made in 1980 and 1981, were 37.0, 48.3 and 97.3 cfs on 22 August 1981, 24 October 1980 and 24 July 1981 respectively. These bankfull discharges would be ideal flows for fish species concerned.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No records available.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-11. Instream flow request for maintenance of game fish habitat in Lolo Creek from Eldorado Creek upstream to Yoosa Creek.

NAME OF STREAM: Lolo Creek, a tributary to the Clearwater River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Eldorado Creek, Idaho County, NE $\frac{1}{4}$ NE $\frac{1}{4}$ ', Sec. 18, T. 34 N.,

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
15	15	15	40	40	40	40/15	15	15	15	15	15

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and whitefish habitat from the point of requested flow upstream to Yoosa Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS

PROPOSED: See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1980 and 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams, Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-11 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

A bank full discharge would be most desirable flow for game fish species concerned. The only discharge information available is from 1980 and 1981. On 25 October 1980, it was 16.1 cfs, on 7 May 1981, it was 150.7 cfs, and on 24 July 1981, the discharge was 40.7 cfs.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No records available.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-12. Instream flow request for maintenance of game fish habitat on Beaver Creek from a point approximately 1.5 miles north of Dubois, ID, upstream to Daisy Creek.

NAME OF STREAM: Beaver Creek, a tributary to Camas Creek.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS

REQUESTED: 1.5 miles north of Dubois, Clark County, SW 1/4NW, Sec. 16, T10N

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
8	8	8	8/30	30	30	30	8	8	10	10	8

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain rainbow trout and brook trout habitat from the point of requested flow upstream to Daisy Creek in Sec. 35, T13N, R36E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS

PROPOSED: See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project---Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST
DESIRABLE FLOW:

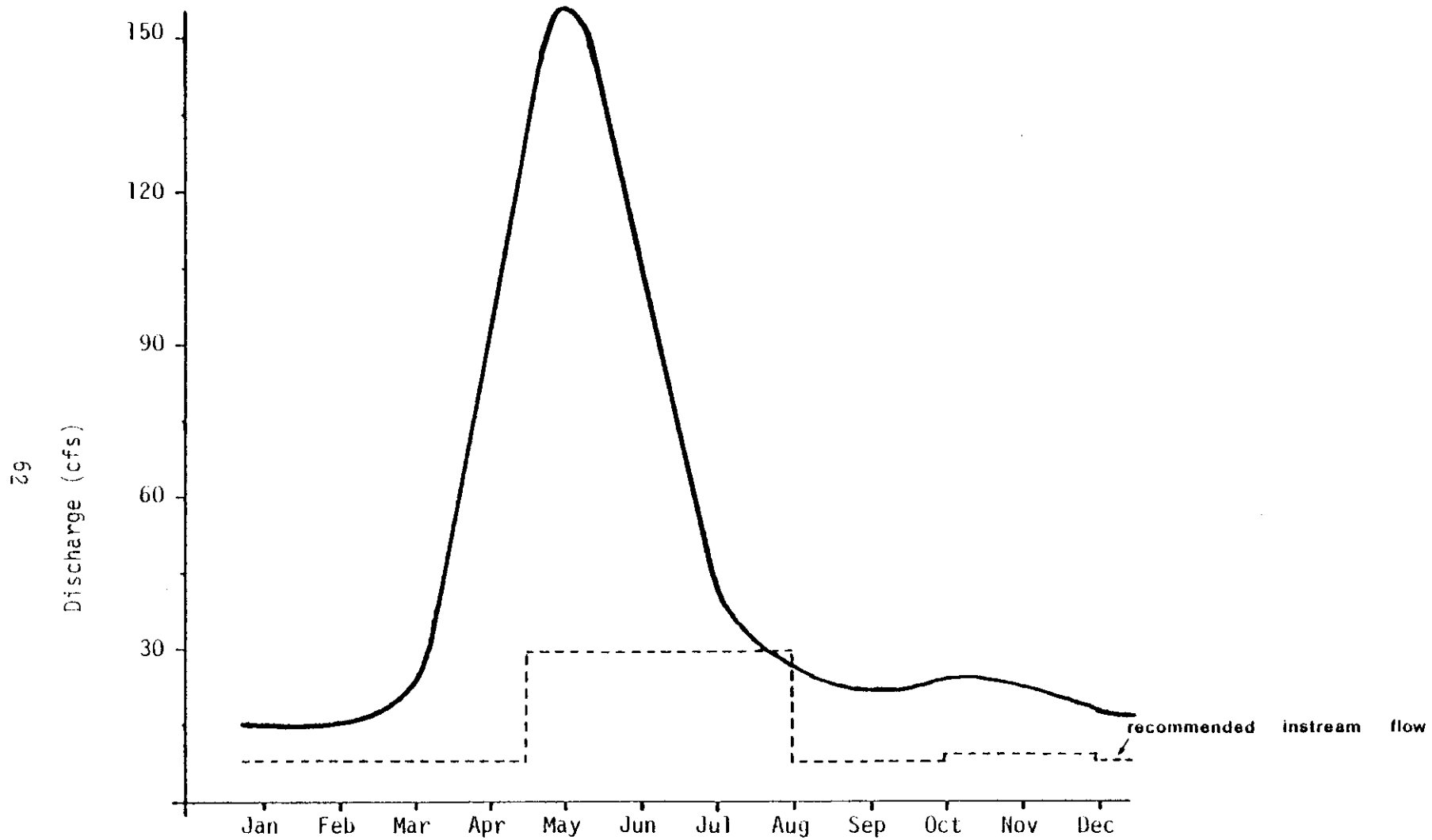
Figure A-12 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available from the gauge station described below. Figure A-13 shows the requested flow overlaid on the mean monthly flow curve. The flow requested is available 100% of the time.

LOCATIONS OF EXISTING GAUGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

Gauge station 413113000 at Spencer, Clark County, NW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 23, T12N, R36E.



FigureA-13. Mean monthly flow curve for Beaver Creek based on twelve years of flow data from USGS gaging station #13-113000.

Figure A-14. Instream flow request for maintenance of game fish habitat in the Little Lost River, from Big Spring Creek upstream to Wet Creek.

NAME OF STREAM: Little Lost River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Big Spring Creek, Butte County, NW $\frac{1}{4}$ NE $\frac{1}{4}$;; Sec. 20, T7N, R28E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
23	23	23	23/43	43	43	43	23	23	23	23	23

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain cutthroat, rainbow, and brook trout habitat from the point of requested flow upstream to Wet Creek near Clyde School.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project---Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

A bankfull discharge would be desirable throughout the year for game fish production Except for the winter months (Dec-Feb) the mean monthly discharge is from 30% to 500% greater than the requested flow. During the winter months the full discharge should be kept instream to protect aquatic wildlife.

Figure A-14 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS
EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available for 19 years (1962-1980) from the gauge station described below. Figure A-15 shows the requested flow overlaid on the mean monthly flow curve. The requested flow is available 90% of the year.

LOCATIONS OF EXISTING GAUGING STATION THAT CAN BE USED IN THE
ADMINISTRATION OF THIS APPROPRIATION:

Gauge station 413118700 near Howe, Butte County, NW $\frac{1}{4}$ SE $\frac{1}{4}$, Sec. 4, T9N, R27E.

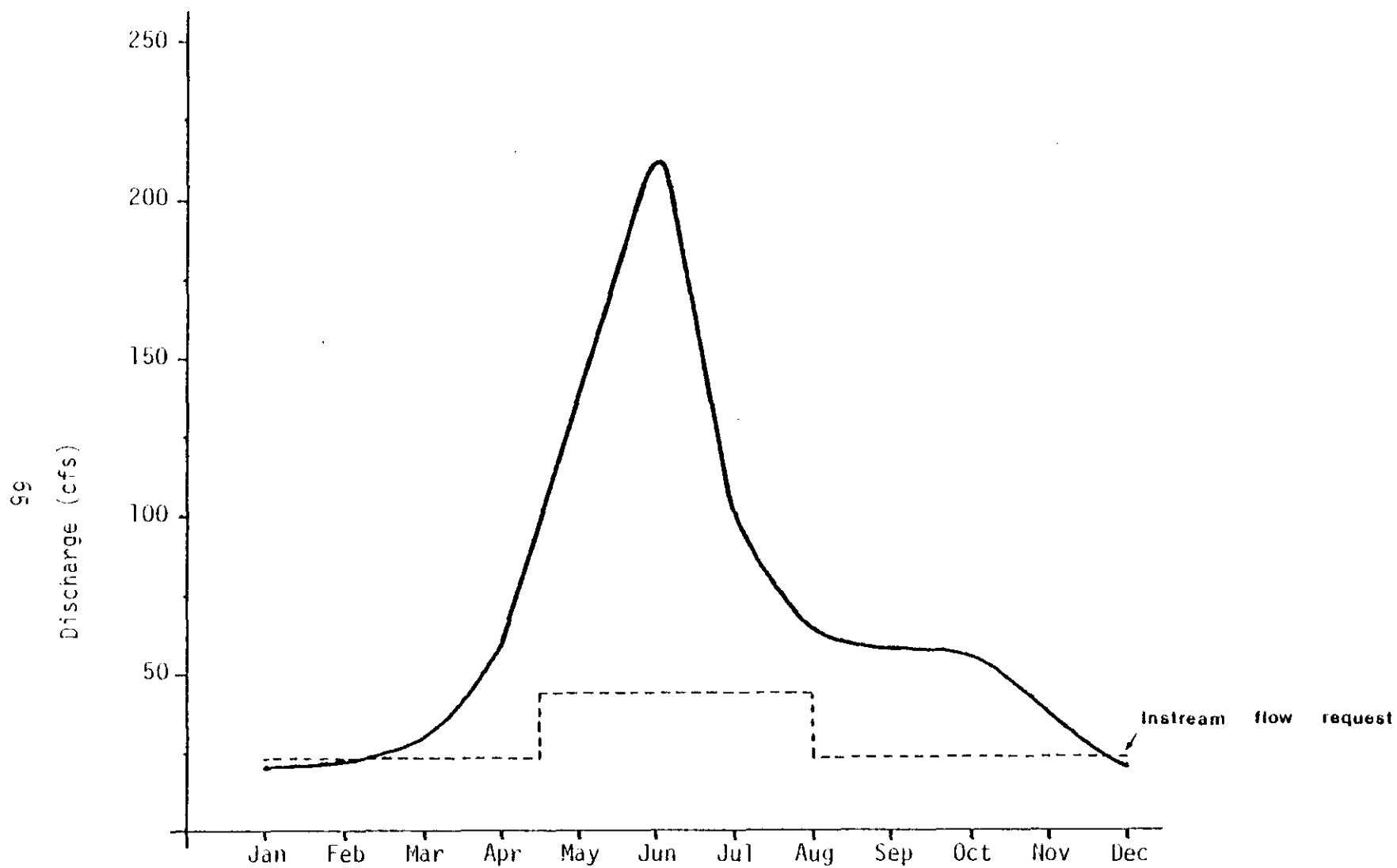


Figure A-1b. Mean monthly flow curve for Little Lost River based on twenty years of flow data from USGS gaging station #13-118700.

Figure A-16. Instream flow request for maintenance of game fish habitat in Medicine Lodge Creek from a point approximately two miles north of Small, Idaho upstream to Webber Creek.

NAME OF STREAM: Medicine Lodge Creek.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

Two miles north of Small, Clark County, SE¼SE¼', Sec. 25, T. 11 N., R. 34 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
22	22	22	35	35	35	35	22	22	22	22	22

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and char habitat from the point of requested flow upstream to Webber Creek in Sec. 17, T. 12 N., R. 33 E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report. Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-16 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Medicine Lodge Creek is strongly influenced by spring and ground water sources, providing stable flows late in the year. This influence provides enough water to maintain the 35 cfs spawning year around, but a minimum flow of 22 cfs (not ideal) is requested for most of the year.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No flow records available.

LOCATION OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-17. Instream flow request for maintenance of game fish habitat in Sawmill Creek from the confluence with Summit Creek upstream to Timber Creek.

NAME OF STREAM: Sawmill Creek, a tributary to the Little Lost River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At the confluence with Summit Creek, Butte County, NE¼NE¼', Sec. 19, T. 10 N., R. 27 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
18	18	18	18	43	43	43	18	18	19	19	18

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain rainbow, brook, and cutthroat trout habitat from the point of requested flow upstream to Timber Creek in Sec. 6, T. 12 N., R. 26 E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-17 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Ideal flow would be bank full discharge to maximize fish habitat. The requested flow (as indicated in the following paragraph) would be much less than the most desirable flow most of the year, and would maintain fish biomass at a level lower than ideal.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records available from gage station #13117300 (discontinued 1973) provided information to develop a mean monthly flow curve over which the requested flow is superimposed (Figure A-18). The flow requested is available approximately 90% of the year.

LOCATION OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

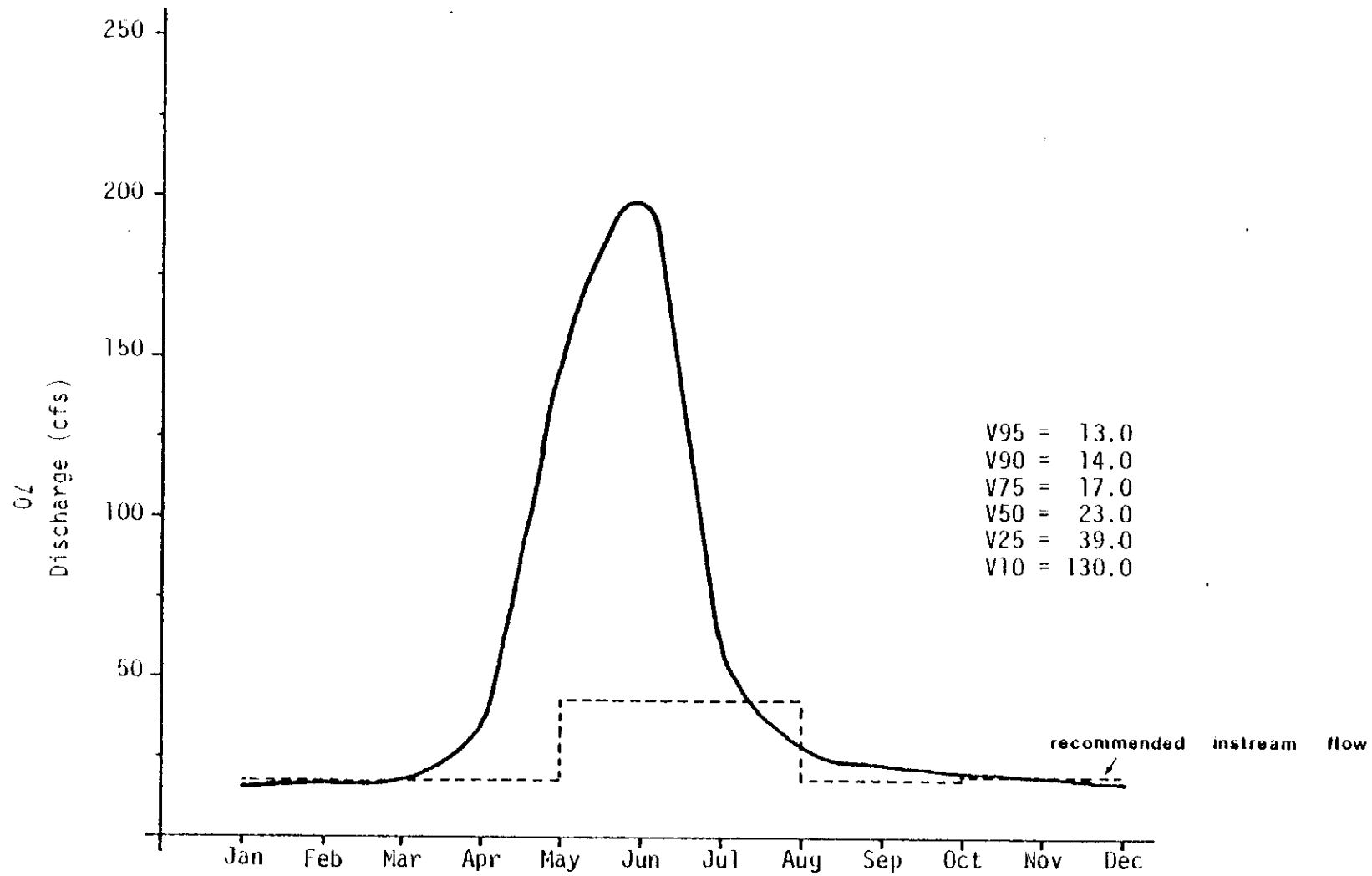


Figure A-18. Mean monthly flow curve for Sawmill Creek based on thirteen years of flow data from USGS gaging station #13-117300.

Figure A-19. Instream flow request for maintenance of game fish habitat in Summit Creek from the confluence with Sawmill Creek upstream to Iron Springs.

NAME OF STREAM: Summit Creek, tributary to the Little Lost River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At the confluence with Sawmill Creek, Butte County, NE14NE¼, Sec. 19, T. 10 N., R. 27 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

Four cfs.

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout habitat from the point of requested flow upstream to Iron Springs in Sec. 8, T. 11 N., R. 25 E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

All year.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-19 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Ideal flow would be a bank full discharge, which, because of the spring influence, should always be at least twice the requested flow.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No flow records available.

LOCATION OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

No gage station exists on Summit Creek.

Figure A-20. Instream flow request for maintenance of game fish habitat in Wet Creek from its mouth to Squaw Creek.

NAME OF STREAM: Wet Creek, tributary to the Little Lost River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with the Little Lost River, Butte County, SW $\frac{1}{4}$ NE $\frac{1}{4}$ ', Sec. 4, T. 9 N., R. 27 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

Twelve cfs.

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain rainbow, cutthroat, and brook trout habitat from the point of requested flow upstream to Squaw Creek in Sec. 8, T. 9 N., R. 27 E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

All year.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-20 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The most desirable flow would be all discharge from this spring-influenced stream. Additionally, the water entering Wet Creek, just below the study site, from Dry Creek channel augments the flow considerably from this point to the mouth.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No flow records available.

LOCATION OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-21. Instream flow request for maintenance of game fish habitat on Willow Creek from Grays Lake Outlet downstream to Ririe Reservoir.

NAME OF STREAM: Willow Creek, a tributary to the Snake River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At Grays Lake Outlet, Bonneville County, SE $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 33, T. 1 N., R. 40 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
22	22	22	50	50	50	50/22	22	22	36	36	22

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and char habitat from the point of requested flow downstream to the Ririe Reservoir flow line.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-21 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The ideal flow to protect fish and wildlife habitat would be a bank full discharge which, according to available monthly mean flow data, is 5% to 700% greater than the requested flow.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available from gage station #13057940 from August 1977 to September 1979, only. This marginally useful information is offered as supporting evidence (Figure A-22), but should be treated cautiously because hydrologically, 26 months is a short time period.

LOCATION OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

No existing gage station on Willow Creek.

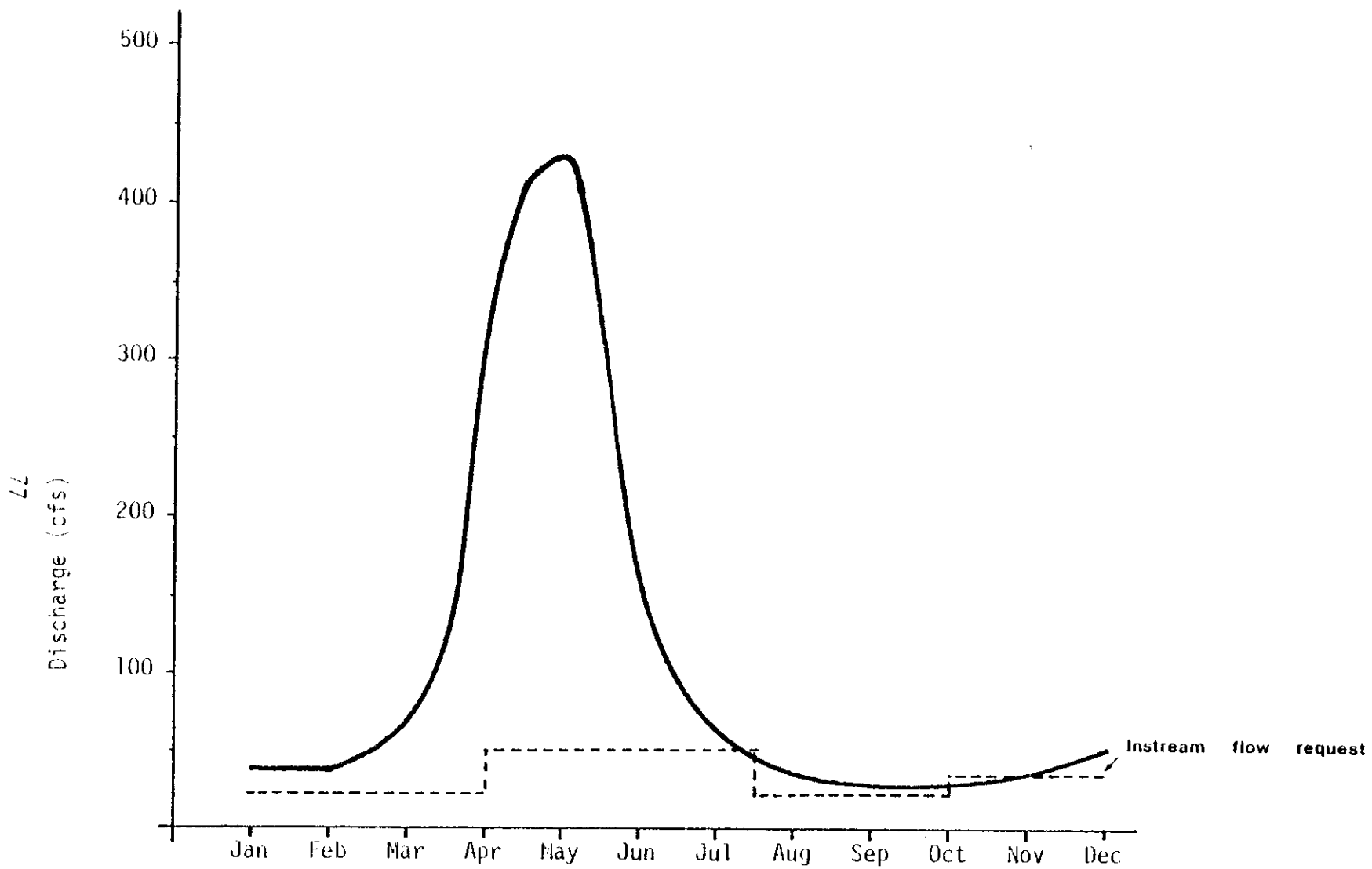


Figure A-22. Mean monthly flow curve for Willow Creek based on two years of flow data from USGS gaging station #13-057940.

Figure A-23. Instream flow request for maintenance of game fish habitat in Big Springs Creek from its mouth upstream to the experimental hatching channels.

NAME OF STREAM: Big Springs Creek, tributary to the Lemhi River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Lemhi River, Lemhi County, NW¼SW¼,, Sec. 12, T16N, R25E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
24	24	24	24/40	40	40	40	24	24	24	24	24

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and salmon habitat from the point of requested flow upstream to the experimental hatching channel in Sec. 20, T16N, R26E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams, Job Completion report, Stream Evaluation Project---Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Ideal flow would be bankfull or approximately 50 to 64 cfs. 78

Figure A-23 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No records available.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-24. Instream flow request for maintenance of game fish habitat on the East Fork Salmon River from its mouth to Little Boulder Creek.

NAME OF STREAM: East Fork Salmon River, a tributary to the Salmon River. LEGAL

DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED: At

confluence of Salmon River, Custer County, NE¼SW¼, Sec. 22, T11N, R18E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND: -

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
80	80	80	80/135	135	135	135	135/80	80	80	80	80

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and salmon habitat from the point of requested flow upstream to Little Boulder Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project---Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The ideal discharge, which is bankfull for game fish species, averages 10 to nearly 1000 cfs greater than the requested flow.

Figure A-24 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available from the gauge station described below. Figure A-25 shows the requested stream flow overlaid on the mean monthly flow curve. The requested flow is available 100% of the time.

LOCATIONS OF EXISTING GAUGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

Gauge station #13298000 near Clayton, Custer County, NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$; Sec. 1, T10N, R18E.

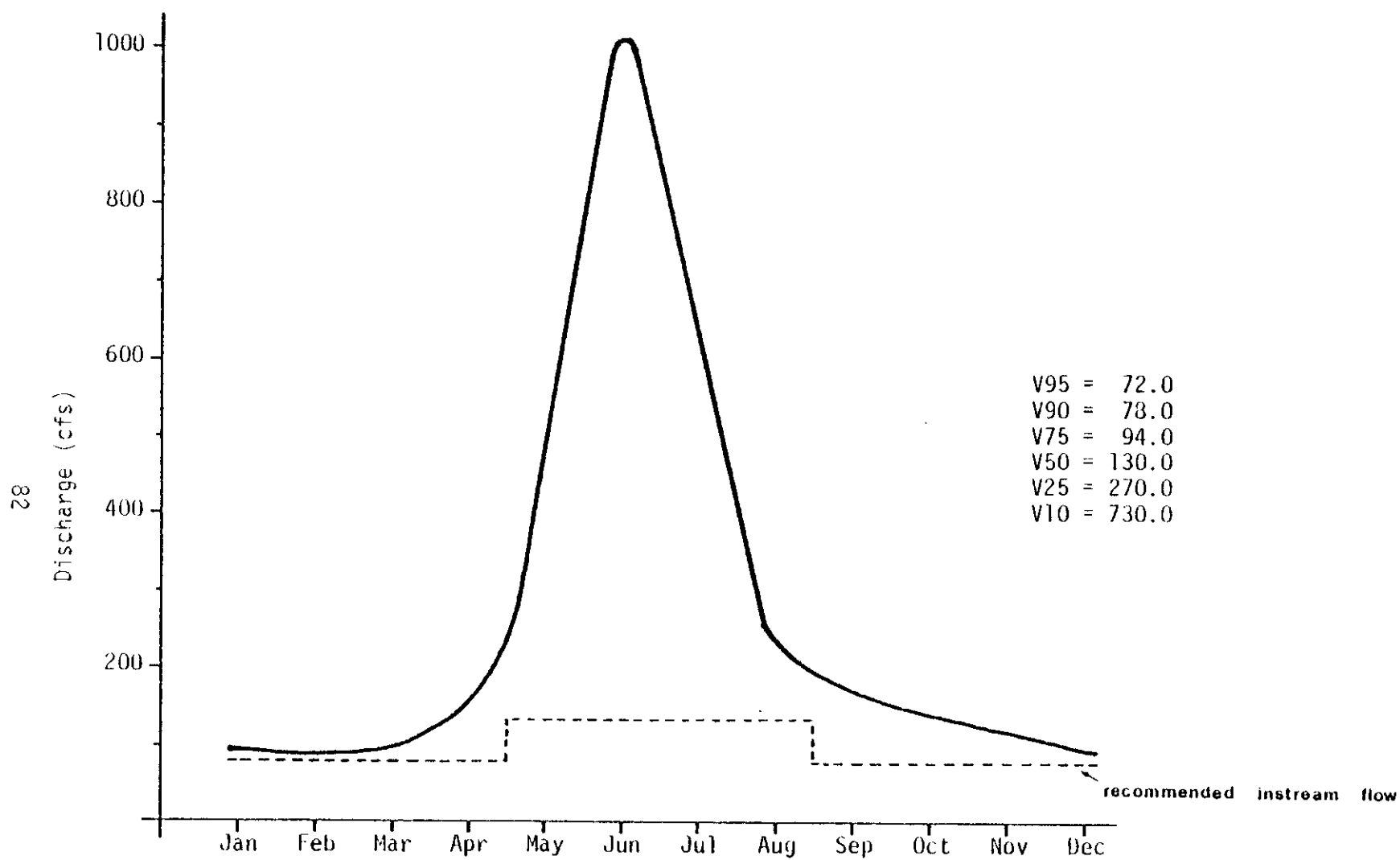


Figure A-2b. Mean monthly flow curve for East Fork Salmon River based on seven years of flow data from USGS gaging station #13-298000.

Figure A-26. Instream flow request for maintenance of game fish habitat in Hat Creek from its mouth to the North Fork Hat Creek.

NAME OF STREAM: Hat Creek, a tributary to the Salmon River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Salmon River, Lemhi County, NW¼NE¼, Sec. 20, T17N, R21E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
5	5	5	18	18	18	18	5	5	5	5	5

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain steelhead, rainbow and cutthroat trout habitat from the point of requested flow upstream to the North Fork Hat Creek in Sec. 10, T17N, R20E.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

As above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTEREFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project--Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The only flow records available for Big Hat Creek above the Little Hat Creek confluence show 5 to 25 cfs in the stream. Ideal flow would be all water to maximize fish production.

Figure A-26 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No records available.

LOCATIONS OF EXISTING GAUGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-27. Instream flow request for maintenance of game fish habitat in Herd Creek from its mouth to Lake Creek.

NAME OF STREAM: Herd Creek, a tributary to East Fork Salmon River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with East Fork Salmon River, Custer County, SW¼NE¼, Sec. 35, T10N, R18E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
14	14	14	14/30	30	30	30	30/14	14	14	14	14

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and salmon habitat from the point of requested flow upstream to Lake Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion report, Stream Evaluation Project---Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The most desirable flow would be a bankfull discharge for game fish species. This varies from the requested flow of 14 cfs to 176 cfs for mean monthly flows.

Figure A-27 continued.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

The only flow records available are from the gauge station described below, which has operated only since 1979. Figure A-23 shows the mean monthly flow curve with the requested flow overlaid on it. With only 2 years of data, this information is marginally useful.

LOCATIONS OF EXISTING GAUGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

Gauge Station #13297597 near Clayton, Custer County, SW $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ ' Sec. 36, T10N, R18E.

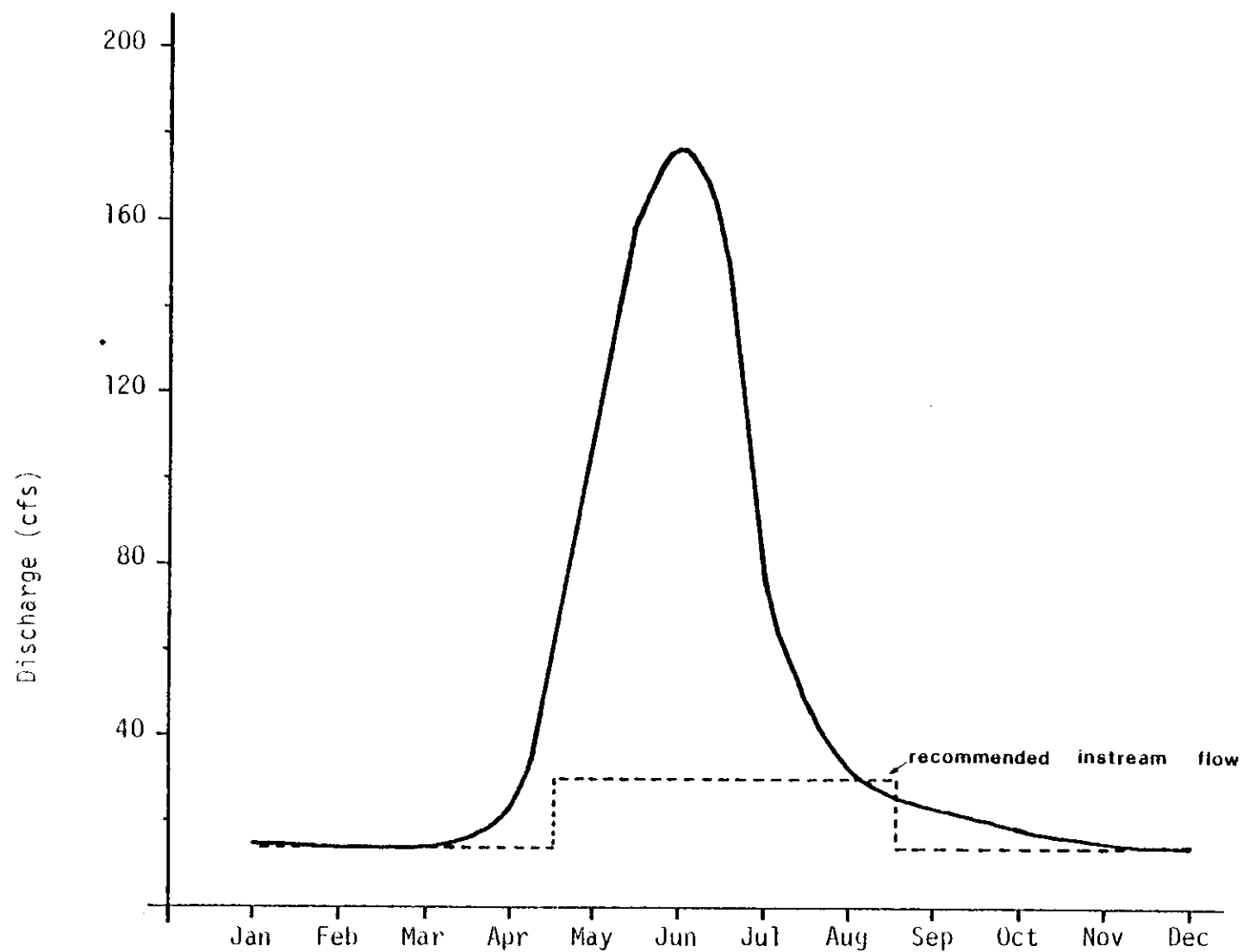


Figure A-28. Mean monthly flow curve for Herd Creek based on two years of flow data from USGS gaging station #13-297597.

Figure A-29. Instream flow request for maintenance of game fish habitat in Iron Creek from the mouth to Badger Creek.

NAME OF STREAM: Iron Creek, tributary to the Salmon River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with Salmon River, Lemhi County, NW¼SW¼, Sec. 15, T. 18 N., R. 21 E

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
3	3	3	40	40	40	40	3	3	3	3	3

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout and whitefish habitat from the point of requested flow upstream to Badger Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use to support fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-29 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

Only four discharge measurements from 1981 are available as evidence. Discharges of 4.8 to 95.2 were recorded.

Ideal flow would be a bank full discharge, even during low flow periods. However, a flow of three cfs is requested because irrigation withdrawals keep the discharge below an ideal bank full quantity.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

No flow records available.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

None.

Figure A-30. Instream flow request for maintenance of game fish habitat in Squaw Creek from the mouth upstream to Cash Creek.

NAME OF STREAM: Squaw Creek, a tributary to the Salmon River.

LEGAL DESCRIPTION OF THE POINT OF THE STREAM WHERE STREAM FLOW IS REQUESTED:

At confluence with the Salmon River, Custer County, SW¼SW¼, Sec. 28, T. 11 N., R. 17 E.

THE PROPOSED STREAM FLOW IN CUBIC FEET PER SECOND:

<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
9	9	9	9/45	45	45	45/9	9	9	9	9	9

THE PURPOSE FOR WHICH THE MINIMUM STREAM FLOW IS PROPOSED:

To maintain trout, salmon, and whitefish habitat from the point of requested flow upstream to Cash Creek.

THE PERIOD OF TIME OR SEASON OF YEAR DURING WHICH APPROPRIATION IS PROPOSED:

See above.

EVIDENCE THAT THE APPROPRIATION WILL NOT INTERFERE WITH ANY VESTED WATER RIGHT, PERMIT, OR WATER APPLICATION OF EARLIER DATE OF PRIORITY:

The requested flow is an instream use and will be subject to all vested water rights, permits, or application of earlier dates of priority.

EVIDENCE THAT THE APPROPRIATION WOULD BE IN THE PUBLIC INTEREST AS OPPOSED TO PRIVATE INTEREST:

The above requested flow is for instream non-consumptive use in support of fish and wildlife for the State of Idaho and its general public.

EVIDENCE OR JUSTIFICATION THAT THE APPROPRIATION IS NECESSARY FOR THE PURPOSES SHOWN ABOVE:

During 1981, personnel from the Idaho Department of Fish and Game collected field data for use with instream flow methodologies to determine flows for fish and wildlife resources. Flow recommendations are presented in this report and the methodology used for the flow determination is detailed in the following report:

Horton, W. D. and Tim Cochnauer. 1980. Instream Flow Methodology Evaluation, Biological Criteria Determination, and Water Quantity Needs for Selected Idaho Streams. Job Completion Report, Stream Evaluation Project -- Phase II, OBS, Western. Water Allocation Project. Idaho Department of Fish and Game. 101 pp.

Figure A-30 continued.

EVIDENCE THAT THE REQUESTED FLOW IS MINIMUM AND NOT THE IDEAL OR MOST DESIRABLE FLOW:

The most desirable flow would be bank full discharge. Figure A-31 shows the discharge recorded at the gage station described below is higher than the requested flow throughout most of the year.

EVIDENCE THAT THE REQUESTED FLOW IS CAPABLE OF BEING MAINTAINED AS EVIDENCED BY RECORDS OF STREAM FLOWS:

Flow records are available from the gage station described below. Figure A-31 shows the requested flow overlaid on the mean monthly flow curve derived from eight years of data. The flow requested is available 95% of the time.

LOCATIONS OF EXISTING GAGING STATION THAT CAN BE USED IN THE ADMINISTRATION OF THIS APPROPRIATION:

Gage station #13297355 near Clayton, Custer County, SW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 9, T. 11 N., R. 17 E.

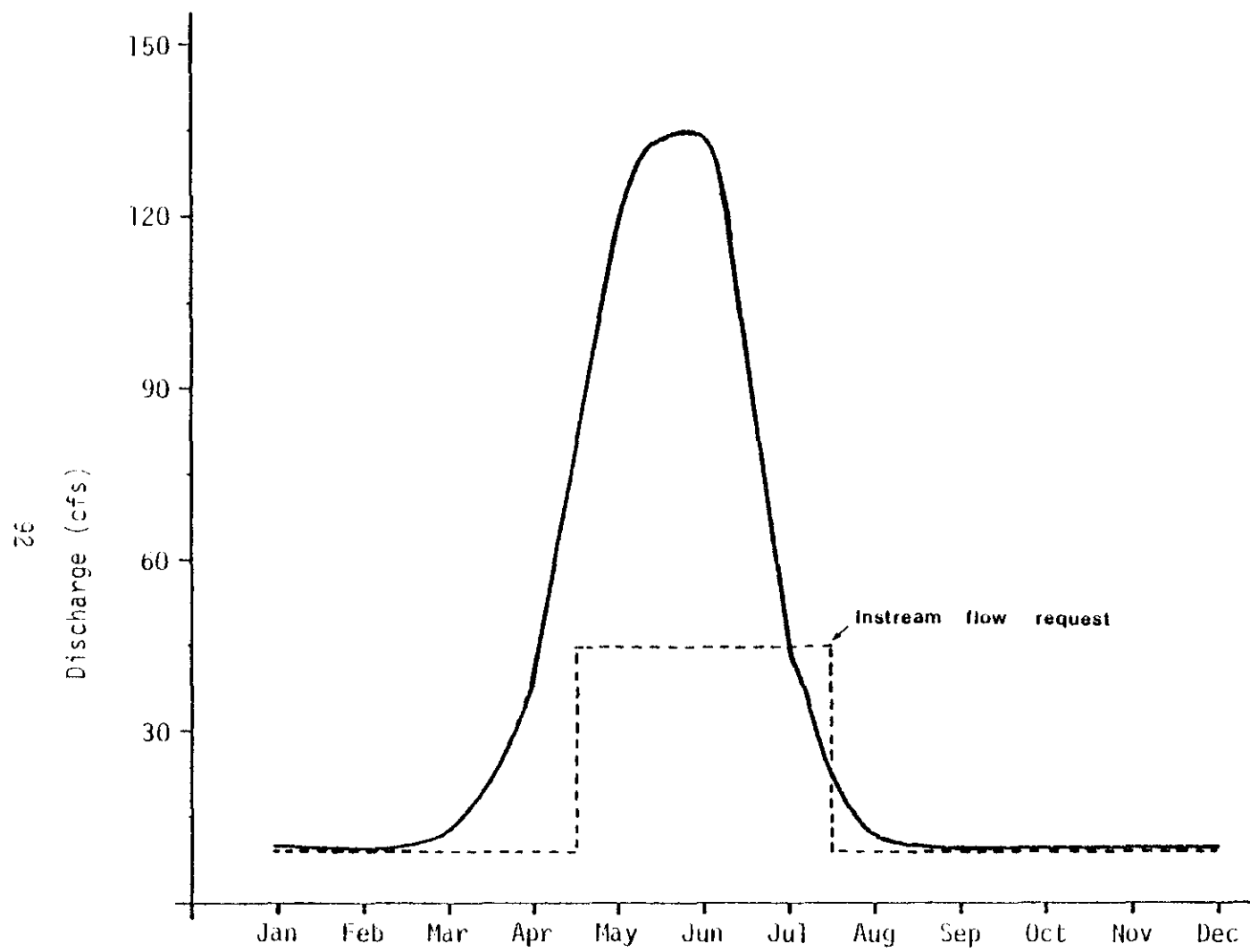


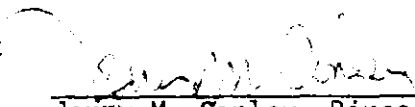
Figure A-31. Mean monthly flow curve for Squaw Creek based on eight years of flow data from USGS gaging station #13-297355.


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